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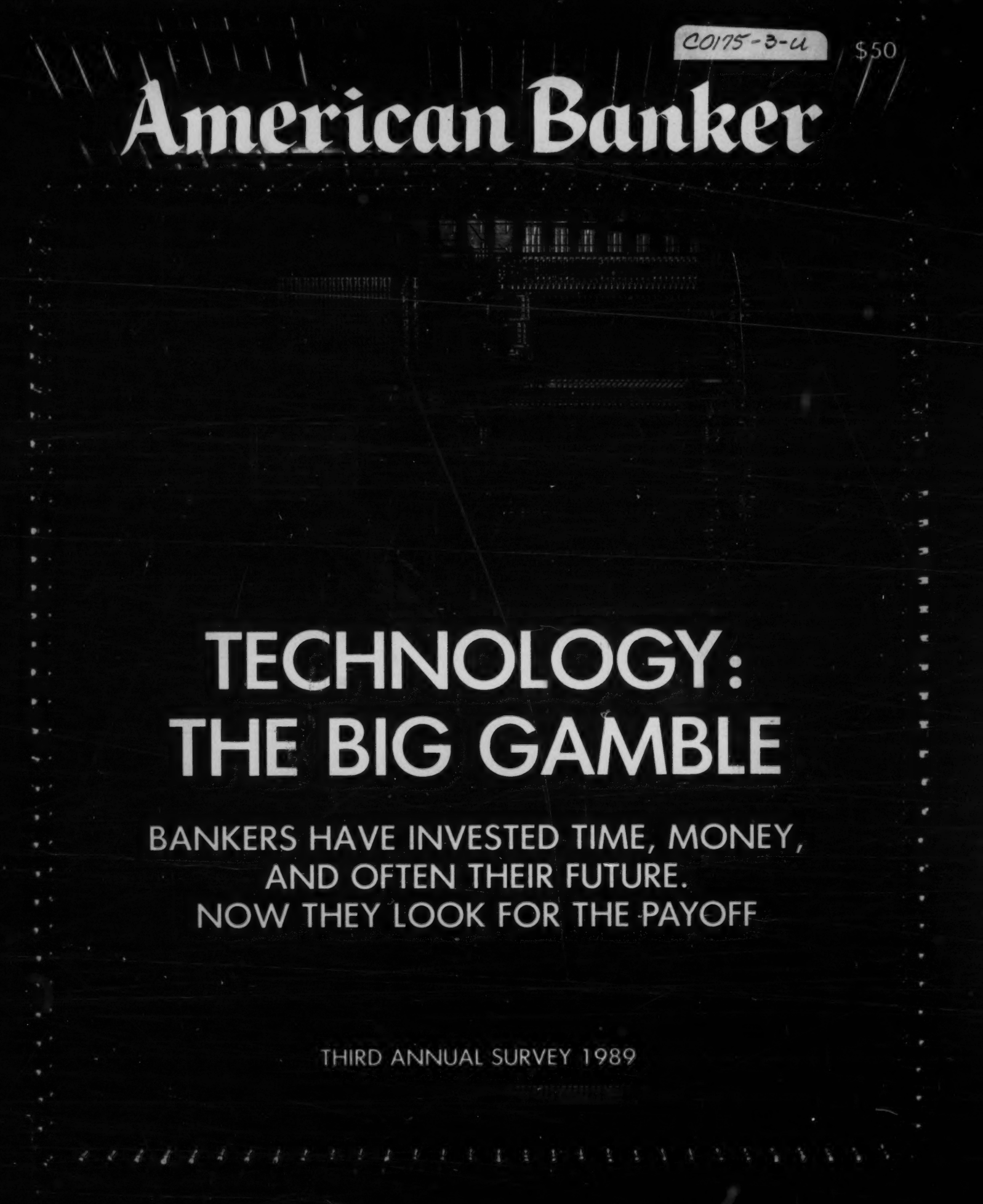

TECHNOLOGY: THE BIG GAMBLE

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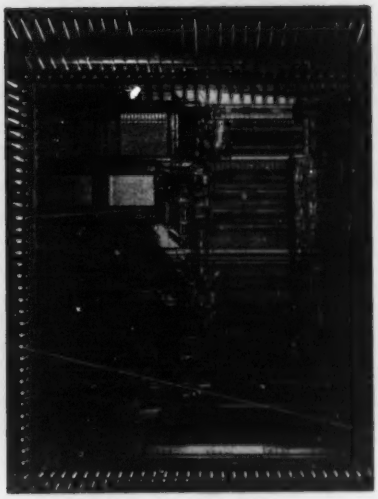

It used to be that the way to identify the banks making a serious commitment to technology was to see if the chief executive officer had a personal computer in his office.

Nowadays, even if the CEO still has an aversion to numbers and reports printed in green on a video screen, it is hard to find a banking institution that does not consider itself a big spender in the high-tech world. In 1989 alone, commercial banks shelled out $20 billion for the gamut of technology-related operations and equipment, according to the *American Banker*'s third annual Technology Survey.

This year's survey pays special attention to the changing dynamics of bank technology – where the most spending is coming from, how it is being used to provide a payback, and which customer-oriented technology holds the most promise. It is based on in-depth interviews conducted by Trans Data Corp. with nearly 400 operations executives representative of the banking universe.

The architect of the survey was Jeffrey Kutler, the newspaper's assistant managing editor, whose overview begins on page 5. He was assisted by a team of *American Banker* reporters who rounded out the survey results with further interviews on specific subjects.

Other major contributors included Suzanne Christy and Judy Ferring, assistant feature editors; art director Pamela Budz and her assistant Carl Zeichner, whose graphic work is displayed throughout this issue.

Few aspects of modern bank management are as important as technology strategy. Special reports such as this one are aimed at helping readers make the decisions that will prove successful.

Sincerely,

Fred R. Bleakley

Fred R. Bleakley
Editor

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How the Survey Was Conducted

The American Banker*'s third annual survey on technology management is based on interviews with senior executives responsible for operations and/or technology at 381 commercial banks. These were chosen as a representative sample of the 3,217 banks in the United States with $75 million or more in deposits.*

Of the 381 respondents, 246 represented banks with more than $250 million in deposits. The other 135 came from banks with $75 million to $250 million in deposits.

The survey was developed by Trans Data Corp., Wayne, Pa., a research affiliate of the American Banker*, in collaboration with the newspaper's editors and technology staff writers. Trans Data conducted the interviews, tabulated the responses, and assisted in the analyses.*

The interviews were conducted by telephone during June and July 1989. The questionnaire – covering budget priorities, organizational and personnel issues, post-merger strategies, future expectations, and other topics – typically required 20 to 30 minutes to complete.

The statistical reliability of the results varies according to the number of responses to a particular question. For a question in which half of all 381 survey participants give the same response, there is a 95% probability that the same answer would be given by 45% to 55% of all banks of similar size.

In other words, the sampling error at the 95% confidence level is no more than plus or minus five percentage points. Subgroups that consist of smaller sample sizes have greater margins of error.

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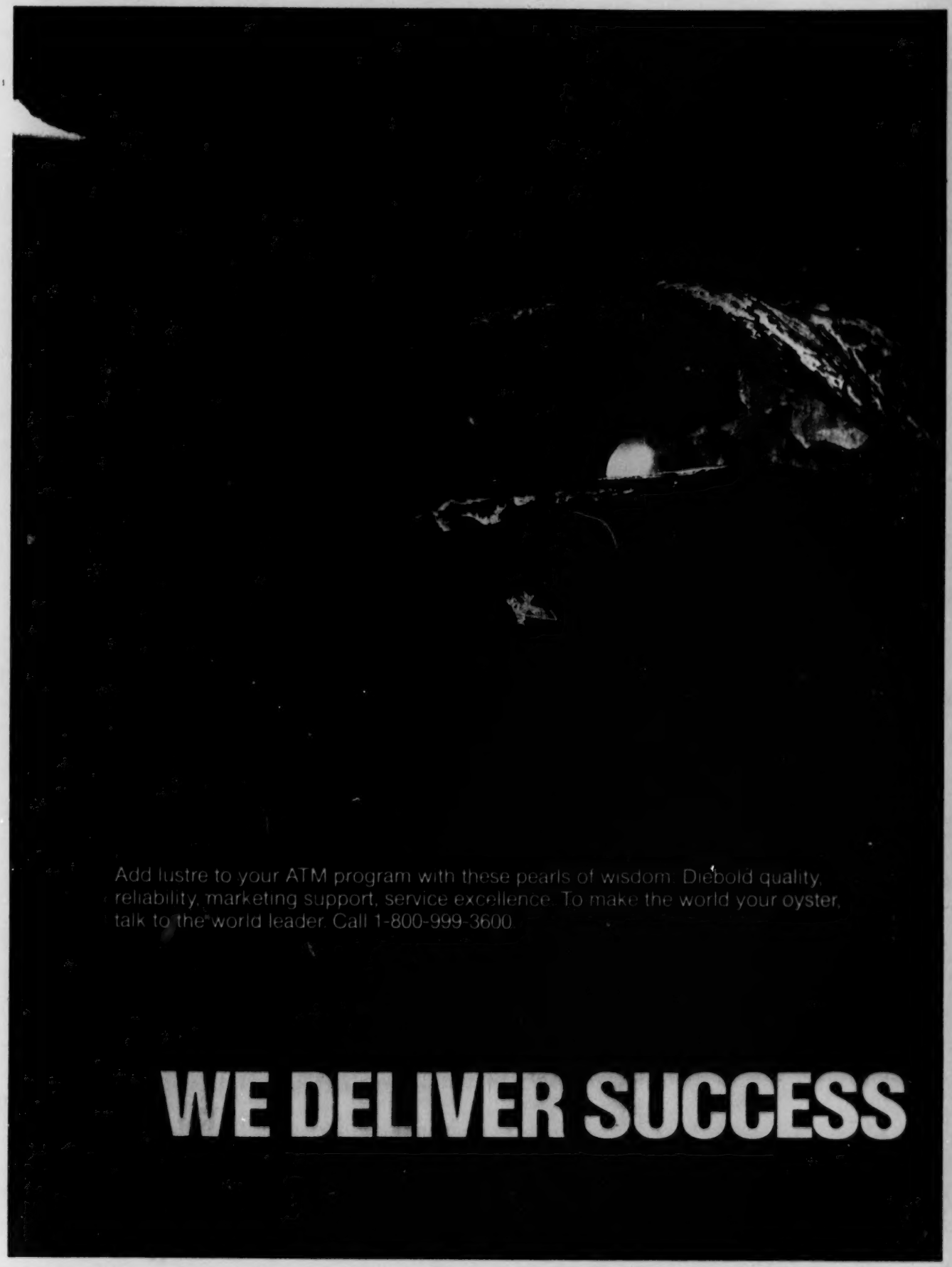
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Bankers Keep Waiting For Payoff from Automation

OVERVIEW

Costs of computer systems are easier to quantify than the bottom-line savings.

BY JEFFREY KUTLER

Bankers are becoming more adept at using and managing the information technology that once seemed so alien to the industry's green-eyeshades mentality. The evidence is ample in the *American Banker* technology survey: Executives have a pretty good handle on how the systems work, their role in achieving strategic goals, their staffing needs, and the efficiencies that future technologies might bring.

But any attempt to make sense of technology's ultimate contribution is marred by a glitch, a nagging question: After years of investing in automation, where is the payoff?

Chief executives – and shareholders – want to know.

Unfortunately for those wedded to traditional measures of profitability, estimates of the costs of technology, though often imprecise, are much easier to come by than the returns on the investments. Bankers and security analysts legitimately wonder if the computer experts have adequately mastered their new data-processing and communications tools, or if they are being taken for an expensive ride at a time when cost cutting is the order of the day.

The *American Banker* technology survey indicates that the ride in 1989 cost all commercial banks in the United States about $20 billion. That equals about one-fifth of the industry's total noninterest operating expenditures such as salaries, rents, and equipment purchases.

Like previously published estimates of technology costs, the calculation is rough but the implication is clear. Technology should be as big a management concern as any other category of noninterest costs. One of them, loan-loss provisions, added up to "only" $16 billion for all banks in 1988.

The $20 billion technology total was extrapolated from data provided by 381 operations executives, a statistically representative sample of the approximately 3,200 banks with at least $75 million in deposits. Trans Data Corp., the newspaper's research affiliate in Wayne, Pa., gathered the data in telephone interviews during June and July. The respondents were asked to provide detailed information, which would be kept anonymous, about their organizational structures, budgeting, and other back-office issues ranging from postmerger actions to regulatory compliance.

Concentration at Big Banks

Based on the statistics gathered by Trans Data, the largest 3,217 banks in the United States – about one-fourth of the bank population – budgeted $16.8 billion for technology in 1989. Costs of computer professionals' and managers' salaries, facilities, equipment, and payments to outside consultants and processing companies were all lumped in with that total.

The $16.8 billion figure was more than double that in the 1988 survey, but actual spending did not increase that much. According to Trans Data analysts, bankers this year provided more information in more detail, hence the more accurate reading of technology expenditures, broadly defined.

The biggest banks allocated the biggest bucks in 1989: $8.6 billion, or 51%, of the $16.8 billion was concentrated among 373 banks with $750 million or more in deposits. The remaining $8.2 billion, or 49%, was scattered among 2,844 banks with at least $75 million in deposits.

Reflecting the accounting problems inherent in such a broad definition of technology spending, survey respondents on the average could not identify where 32% of their technology budgets were going. (They were able to say that 28% went for salaries and benefits; 24% for facilities, equipment, and maintenance; and 13% for services from external agents.)

Fuzzy accounting might be excusable if there were compensating benefits. Indeed, bankers increasingly justify their

What Banks Spend on Technology

Distribution of 1989 spending on existing operations plus capital budgets, including payments to outside suppliers. (banks grouped by deposits)

Size of banks	$75-$100 million	$100-$250 million	$250-$750 million	$750 million-$2 billion	Over $2 billion
Dollars spent Total: $16.8 billion	$1.2 billion	$4.3 billion	$2.7 billion	$2.4 billion	$6.2 billion
Percentage of total	7%	26%	16%	14%	37%
Number of banks	826	1,480	538	202	171
Average spending per bank	$1.5 million	$2.9 million	$5.1 million	$11.9 million	$36.3 million

Base: Data for the nation's 3,217 largest banks, extrapolated from 240 responses from a stratified sample of 381 banks

Source: American Banker *Technology Survey 1989*

technology expenditures by citing competitive advantage or innovation, and in the case of mergers, by quantifying the gains from consolidating operations centers and eliminating jobs. But that still does not explain where 32% of the technology money goes, and most chief executives would not be comfortable living for very long with such uncertainty.

Cultures Still Clash

While more and more CEOs express faith in technology, often by appointing a chief information officer to the inner circle of top management, they struggle to reconcile banking's traditional aversion to risk with the more freewheeling style of an information- and service-driven business. Few CEOs have gone as far as John S. Reed, chairman of Citicorp, who has said he views banking as an "information business" despite its monetary trappings.

"Certainly, there are selected banks that are rapidly growing in technology sophistication, and some are really on top of it," said Michael Packer, a vice president of the Mac Group in Cambridge, Mass. "But when you consider there are 13,000 banks, very few have gotten very far with technology, and so the industry as a whole is basically behind the curve.

"For many, it remains unclear how they want to manage the function and how to leverage it most effectively in the various lines of business," said Mr. Packer, who directs the Mac Group's consulting practice in information technology strategy. "Most banks are still just coming to grips with how to use information technology."

The managers of banks' business units, including the many CEOs who are inexperienced with technology, lack the "mental models" necessary to help create cost-effective systems that meet customer service needs and improve profitability, Mr. Packer said. "Systems organizations are under so much pressure to provide the functionality that line managers say they need, that they never get around to delivering the flexibility and quality that they should."

Mr. Packer said more bankers must develop those mental models. "They won't be able to do their jobs without them," the consultant said.

"There are a lot of excellent decision-support systems on the market that can go a long way to improving management skills through technology," he added. "But those systems can be whipped up in no time. System-building time is now less of a problem than how long it takes an organization to make the best use of a system. Learning to use information in a way that moves the business forward in new directions – the new mental models – is the critical path, and I think very few banks are equipped to be successful at it."

The Search for Scale

Mr. Packer pointed to another source of confusion for those trying to set coherent technology strategies: There are two ways of looking at banking economics.

One is to focus on the large-scale businesses with a high degree of fixed costs, including the brick-and-mortar branch networks in retail banking, the highly computerized credit-card processing centers, and the information systems needed to serve wholesale clients' information needs. "These businesses are driven by economies of scale, which suggests that only a small number of large players will survive in those markets," Mr. Packer said.

"Banks can compete on a smaller scale through more targeted selling and marketing, by learning to differentiate their service," he added. Private banking would be a case in point. The overhead per customer would be higher than in the mass market, but the wealthier clients would be willing to pay higher fees for a more personalized service.

If the *American Banker* survey is any indication, technology managers are currently fixated on scale economies, not boutique businesses. Especially at the biggest banks, they say their transaction-processing factories can reduce unit costs as volumes go up. In the current, active climate for mergers and acquisitions, consolidation of operating centers becomes a top priority, and a way to justify acquisition costs.

Of the 381 participants in the survey, 41% said they had been involved in a merger within the past two years. That proportion rose to 55% of banks above $250 million in deposits, and more than 60% of banks above $750 million.

At least six in 10 of the merged banks subsequently combined data centers, cut staff, sold off unneeded equipment, and integrated their software and data bases. They reported cutting costs an average of11% below the organizations' pre-merger operating budgets, and that was after two years or less of consolidation. The savings would be expected to mount over time.

"There are tremendous economies of scale to be realized in consolidations," said Kavin Moody, corporate information and technology director at Bank of Boston, one of the many superregional companies seeking that technology-related return on its acquisition investments. "It's a tactic. Within our retail banking operations in New England, that's been a kind of ongoing thing for some time. It hasn't been dramatic, but it will continue."

Wayne Lewin, a bank marketing and personnel consultant, said many banks are not reducing costs dramatically enough, and could do so by letting others

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– the bigger banks and service bureaus with scale economies – manage their technology for them.

This might be a relief to the small banks, which, according to the *American Banker* study, have a higher percentage of their staffs in operations and technology jobs than do banks with $250 million or more in deposits.

"Despite all the cost cutting and automation, staff overhead is still too high," said Mr. Lewin, president of First Financial Marketing Corp., Schaumburg, Ill. "People should be deployed in the core business, in revenue-generating positions, and everything else should be contracted out. That way, a bank would spend its time managing its business, not data processing, human resources, and the like. That could cut noninterest costs by another 25% to 30%."

In addition to the findings on spending and scale economies, the third annual *American Banker* survey also came up with the following results, which are analyzed more closely in the pages that follow:

• **Based on their willingness to "spend for the future," big banks are likely to extend their technological advantage over smaller competitors.** Capital budgets – the portion of technology money spent on new systems and equipment – increased at $2 billion-deposit and larger banks an average 16% in 1989 to $4.6 million. Capital expenditures were 13% of the $36.3 million total technology budget at those large banks, compared with 10% of an average $13.8 million budget for all banks in the survey. The biggest banks were also far more likely than others to have internal research-and-development units exploring new systems that have only a long-term profit potential.

The Payoff From Consolidation

Actions of banks that have merged over past two years, grouped by deposits.

	All Banks	$75-$100 million	$100-$250 million	$250-$750 million	$750 million-$2 billion	Over $2 billion
Percentage involved in mergers	41%	16%	27%	43%	61%	64%
Merged data bases	70%	38%	56%	75%	74%	76%
Integrated software	70%	75%	56%	61%	77%	76%
Disposal of equipment	67%	25%	61%	64%	65%	81%
Consolidated hardware	67%	38%	33%	71%	71%	81%
Cut staff	64%	38%	56%	57%	71%	71%
Merged operation centers	62%	25%	50%	61%	71%	69%
Average reduction in combined budgets	11%	11%	10%	9%	12%	10%

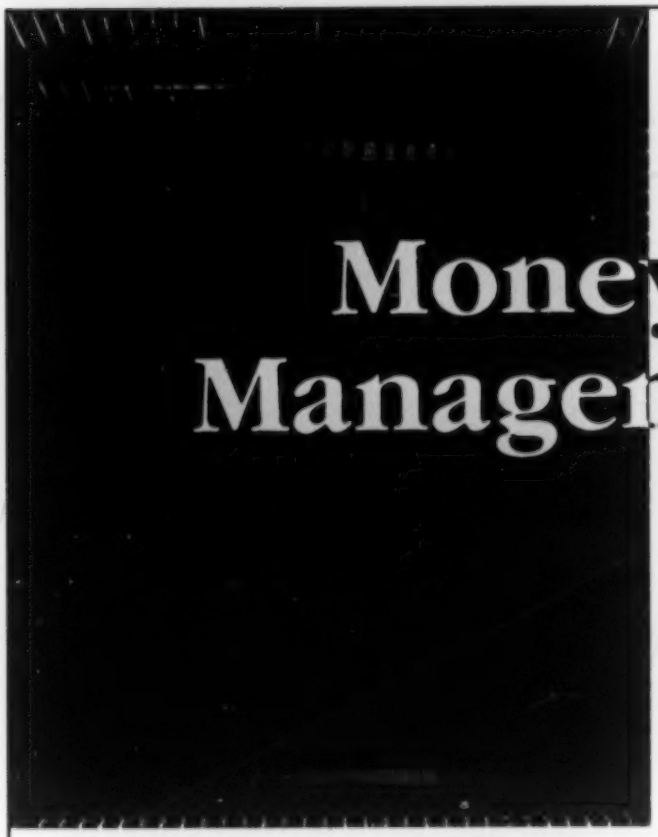
Source: American Banker *Technology Survey 1989*

• **Bankers increasingly view operations and technology as sources of profit, not merely back-office support mechanisms for traditional banking activities.** Among survey respondents, 39% said their primary goal is to increase revenue or generate new business, while 35% said it is to cut costs and/or staff. Regardless of orientation, their top technology investment priorities over the next five years are similar: personal computers, applications software, and among the biggest banks, data communications.

• **Decentralization has lost its appeal as a data processing management strategy.** A majority of the banks in the survey are members of bank holding companies and reported that their parent organizations exercise some, and at times total, control over equipment choices and other operations policies. This reversal of a 10- to 20-year trend has been accelerated by the bank merger wave. Holding companies tend to seek efficiencies through operating standards and consolidation of data centers.

• **Bankers said Regulation CC, a 1988 Federal Reserve rule that limited the delays in making funds available on deposited checks, had a relatively minor impact on back-office operations.** Despite industry protests that the regulation would be excessively costly, one-third said it had no impact at all, and of those who said their costs rose, the average increase was 4%. In another area of regulatory compliance – the need for contingency planning – 93% said they had formal plans to respond to a catastrophic disruption of their computer centers. Industry experts questioned the truthfulness of many of the bankers who said they had such plans in place.

• **Since 1987, technology managers have become more optimistic about the prospects of four futuristic developments: truncation, or nonreturn, of canceled checks, expert systems for loan approvals, smart cards, and video home banking systems.** The first three, along with electronic data interchange, image processing of checks, and computer-aided software engineering will all be in widespread use within five years, according to a majority of the survey respondents. Only home banking got minority support, at 28%. □



Money/ Management

The big push is on to cut expenses, but banks are not skimping on technology. One way some companies keep tabs on costs is by billing units for in-house data processing services. Looking to the bottom line, operations departments are proving their worth as 'profit centers' that contribute to business growth and profits.

- ♦ Spending rises 10
- ♦ Accountability 16
- ♦ Operations as 'profit center' 18

Despite Cost Cutting, Banks Spend More on Technology

More bankers see systems as a 'competitive whip,' but increases are smaller.

BY JEANNE DUGAN COOPER

Although banks' computer departments have felt cost-cutting pressures as severely as other business units, spending on information technology continues to rise.

Researchers' estimates of annual industry spending on computers, communications, systems personnel, and related support vary, generally from $10 billion to $20 billion. The *American Banker* technology survey puts the 1989 figure at the high end of that range.

That means about $1 of every $5 of noninterest operating costs for 13,000 commercial banks – including salaries, premises and equipment – can be attributed to information technology. The industrywide technology budget approaches the $25 billion mark in net income after taxes that all federally insured banks reported for 1988.

The big dollars help explain the added prestige that accrued to technology and its managers during the 1980s. As a Banc One Corp. manager put it, systems have become a "competitive whip" in increasingly difficult market conditions and therefore deserve some of the dollars being slashed from personnel and paperwork budgets.

On the other hand, technology has become a huge budget item that, if cut even fractionally, would yield a dollar-for-dollar improvement in net income. After years of investing in systems that promised a payback, chief executive officers are looking more closely than ever at the numbers to determine whether they have finally cashed in or must wait still longer.

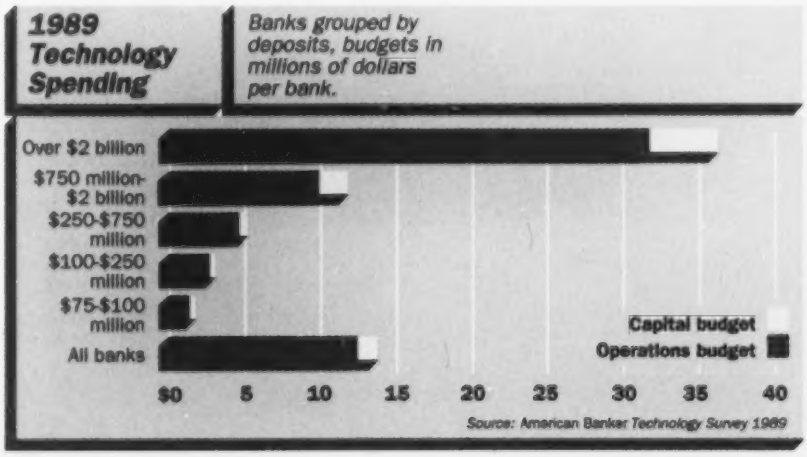
For those closest to the technological front lines, there is no debating the need to keep the dollars coming.

"If you look at financial services, we are in the information business," said Webb Edwards, director of management information systems for First Interstate Bank of California, Los Angeles. "Technology is a corporate asset."

"If you don't make wide technology investments, that wealth of information we need to serve customers suffers dramatically," Mr. Edwards said. "Either you're going to have the right kind of technology to serve the company, or you won't perform well."

Figures for Top 3,217

The *American Banker* calculation of aggregate technology spending is based



on data from a representative sample of the 3,217 banks in the United States with at least $75 million in deposits.

Senior operations and technology executives from the 381 commercial banks in that sample gave cost and other data to Trans Data Corp., the newspaper's Wayne, Pa., research affiliate, in a series of telephone interviews during June and July 1989.

Extrapolating those banks' spending to all banks in the over-$75 million category, the 1989 technology budget reached $16.8 billion. For comparison, all U.S. banks in 1988 spent $98.6 billion on noninterest expenses, excluding loan-loss provisions, according to the Federal Reserve Board.

Assuming that all banks' noninterest costs are rising in 1989 at about the same 4% rate as in 1988, to $102.5 billion, 16% of that will be attributable to technology spending by the largest 3,217 banks. The remaining 9,000-plus commercial banks would probably bring the industrywide technology figure to $20 billion or more, around 20% of total noninterest costs.

Other researchers have come up with different answers to the same question about industrywide technology spending. The magazine *Computers in Banking* recently estimated total 1989 spending at $11 billion for all banks. McKinsey & Co., a management consulting firm that has made a similar estimate, says in a forthcoming book, "Technology in Banking," that the total will not reach $20 billion until 1995.

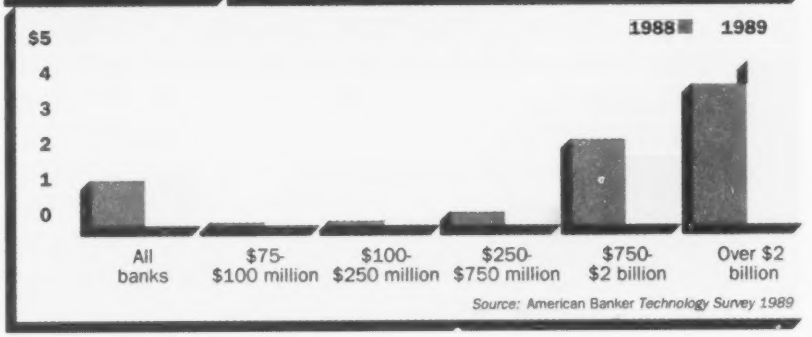
Some surveys seek data only about computer systems and communications, not the people it takes to run them or the buildings to house them. Other surveys concentrate on banks' spending on systems they own, not services they may buy from outside suppliers.

The *American Banker*/Trans Data questionnaire was designed to seek an all-encompassing number, which might err on the high side but would give an indication of the perhaps misunderstood magnitude of technology in banking. Survey participants were asked to give their total budgets and to break them down into such categories as personnel, facilities and supplies, equipment, software and maintenance, and services bought from outside suppliers.

For most respondents, these budgetary items did not add up to 100% of the technology budget. The average bank in the survey had 32% of its spending in unidentified areas, suggesting that technology dollars are not easily or fully accounted for.

Average Capital Budget

Allocations for new equipment, software, and systems. (in millions of dollars per bank, grouped by deposit size).



Source: American Banker *Technology Survey 1989*

Increase Is Deceiving

The deeper digging for technology data in this year's *American Banker* survey produced a significantly higher aggregate spending figure than in 1988. In that year, 3,288 banks with $75 million or more in deposits allocated an estimated $7.1 billion to technology. Spending certainly did not more than double in 1989. More of it is coming to the surface.

The fact is that bankers are controlling costs across the board, and technology is no exception. In past years, it was common to see double-digit increases for technology. Most bankers now report that technology budgets – consistent with most operating budgets – are not increasing more than 10% a year.

"Banks are under pressure to raise earnings, and nobody is interested in spending a nickel more than they have to," said Elaine Bond, senior vice president for corporate systems at Chase Manhattan Bank, New York.

Technology expenditures unquestionably will rise more rapidly than other costs, however. Bankers view technology as a competitive tool and intend to install systems in order to cut other expenses.

The aggregate $20 billion a year that the book "Technology in Banking" says the industry will spend in 1995 is almost double the $11.6 billion spent in 1988, according to the authors, McKinsey consultants Diogo B. Teixeira and Thomas D. Steiner.

Both that book and the *American Banker* study show the largest banks continuing to do the bulk of the industry's technology spending.

Banks in the *American Banker* survey with $2 billion or more in deposits budgeted an average of $36.3 million for technology this year. Together, the 171 banks in that group will spend $6.2 billion, or 37% of total technology spending by banks in the survey.

The big-bank percentage exceeds the 30% share spent by the next two size seg-

> "If you don't make wide technology investments, that wealth of information we need to serve customers suffers dramatically. Either you're going to have the right kind of technology to serve the company, or you won't perform well."
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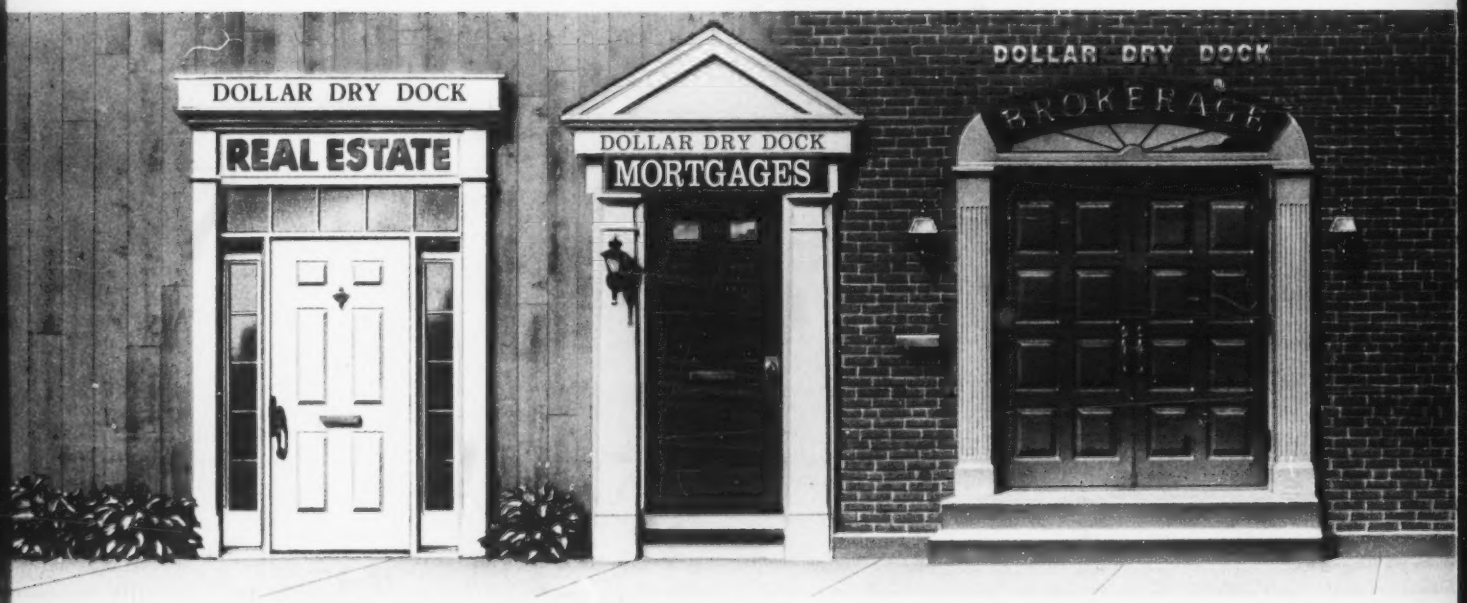

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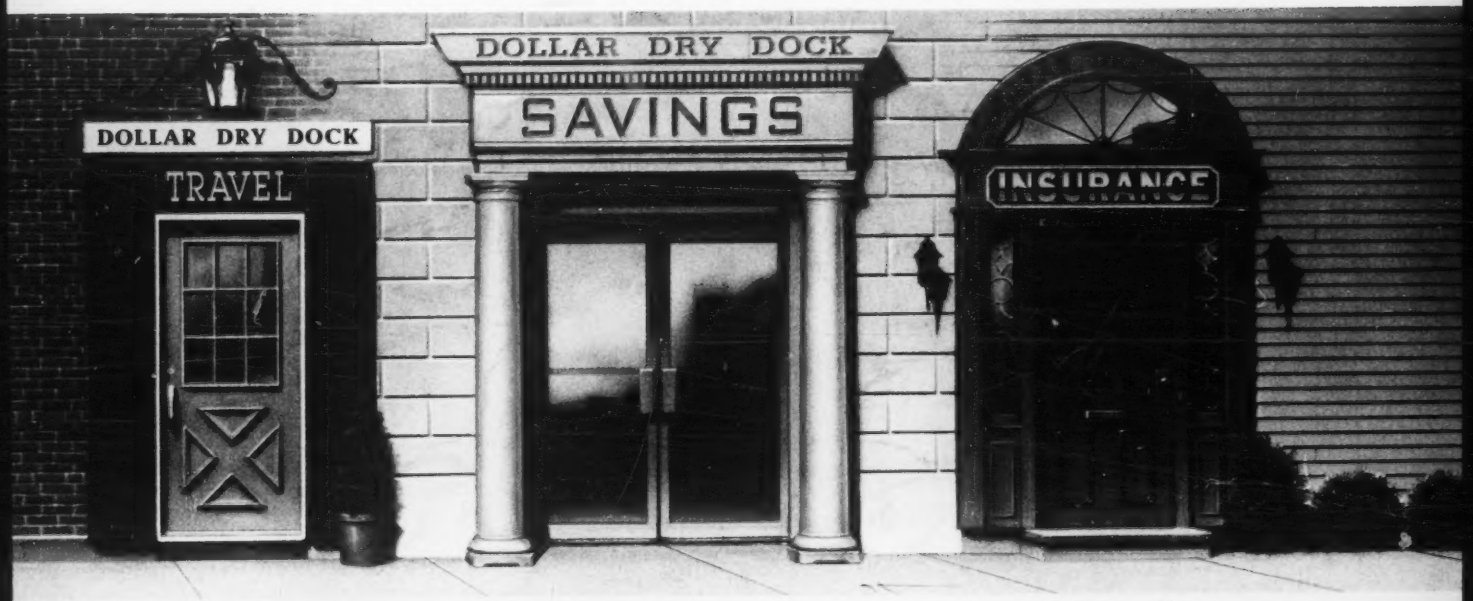

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> "Technology is one of three businesses we're in. We're in the banking business, bank acquisition business and technology business. That comes right out of the mouth of John B. McCoy [chairman of Banc One Corp.] whenever he talks to analysts. I think of technology as a competitive whip."
>
> Ronald Cybyske
> Senior vice president, Bank One Services

ments combined – 202 banks with $750 million to $2 billion in deposits and 538 banks with $250 million to $750 million.

The remaining 33%, or $5.5 billion, would be spent by 2,306 banks with $75 million to $250 million in deposits but at an average of less than $2.5 million per bank.

"Bigger banks view technology as an investment, rather than a cost," said William Synnott, director of banking technology for Nolan Norton & Co., a Lexington, Mass., consulting company.

Capital Commitment Up

Another indication that big banks are not flagging in their commitment to technology is their capital budgets – the amounts invested in new equipment, software, and services.

The average bank in the survey said it is devoting $1.4 million to capital expenditures this year, or 11% more than in 1988. The $1.4 million also was 11% of the $12.4 million being spent on current operations and technology needs.

Capital spending is relatively low at banks with deposits of $75 million to $100 million – an average of $123,000, or less than 9% of their average $1.4 million operations budget. By comparison, banks with deposits of more than $2 billion had average capital budgets of $4.6 million, or 15% of their $31.7 million in budgeted operating costs.

Only in one size category – banks with deposits of $750 million to $2 billion – did the average capital budget fall from 1988 to 1989. Its 20% decline, to $1.9 million from $2.4 million, may reflect a more cautious system-development philosophy, especially at banks that are subject to takeover and consolidation.

"In past years, vendors would announce a new thing, and we would all rush out and buy it and then look for a place to use it," said Mr. Edwards of First Interstate Bank. "Now, we focus on the business and decide what products we need. We only spend dollars today that will directly impact customer service, produce revenues, or reduce expenses."

The largest technology budget line is for staff and salaries. The average bank surveyed spends 40% of its technology costs on salaries and benefits. That figure ranges narrowly from 36% at banks with $100 million to $249 million in deposits to 45% at the largest banks.

Banks differ in what they spend on outside consultants and service providers. As would be expected, the biggest banks do most of their own work and spend only 7% on outside resources, but the average bank between $75 million and $100 million spent 24% externally.

On average, the smallest share of expenditures went for facilities and supplies, at 17%, while new equipment and maintenance got 20%.

Where Costs Can Be Cut

Bankers are taking steps to reduce spending on two areas that seemed almost uncontrollable in the past: systems maintenance and data center operations. Several large banks have already begun fixing their computers in-house, in addition to consolidating data processing centers and signing pacts with outside computer companies to run their equipment.

Bank South Corp., Atlanta, said it expects to cut the $20 million it spends each year on leasing equipment by handing over its data processing operations – including employees and equipment – to International Business Machines Corp. The bank recently signed a 10-year facilities management contract with the computer giant.

In consolidation, First Interstate Bank of California managed to trim its technology budget to $180 million from $225 million by boiling down a dozen data centers to four, according to Mr. Edwards, director of management information systems.

"It's an interesting phenomenon," he said. "Usually, a company suffers when you lower expenses. We've driven down our costs $40 million to $50 million, and we are spending the dollars wisely, which is allowing us to do more."

Similarly, Valley National Corp., Phoenix, consolidated several small data processing facilities and centralized more tasks in order to cut 15 jobs and save $1 million. Also, Union Bank, San Francisco, is consolidating its five data processing facilities into three.

"There are tremendous economies of scale to be realized in consolidations," said Kavin Moody, corporate information and technology director at Bank of Boston. "It's a tactic. Within our retail banking operations in New England, that's been a kind of ongoing thing for some time. It hasn't been dramatic, but it will continue."

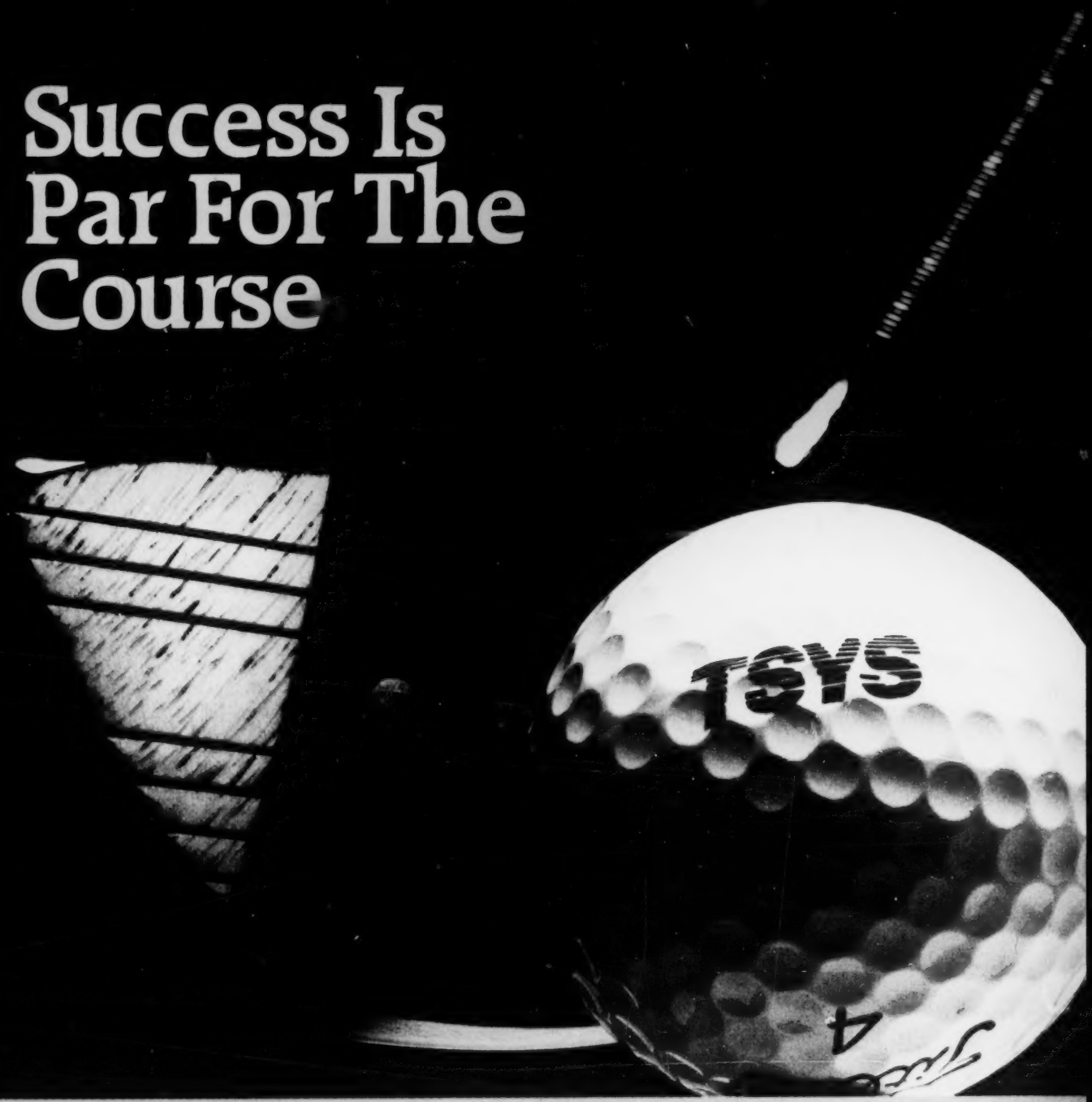
More End-Users Charged

Another growing trend, the survey found, is banks' treating their data processing operations as autonomous businesses with separate profit and loss statements. Forty-six percent of banks' computer departments charge end-user departments for data processing functions, which helps the computer centers quantify their value to the corporation.

Banc One Corp., for example, established Banc One Services Corp. as a separate company serving affiliate banks. The Columbus, Ohio, holding company invests about 17% of its operating expenses in the data processing operation and intends to increase its technology budget by about 10% next year.

"Technology is one of three businesses we're in," said Ronald Cybyske, senior vice president of Bank One Services. "We're in the banking business, bank acquisition business and technology business. That comes right out of the mouth of John B. McCoy [chairman of Banc One Corp.] whenever he talks to analysts. I think of technology as a competitive whip." □

Success Is Par For The Course



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Chargeback Accounting Keeps Affiliates Focused

If he worked for any other data processing company, with another set of customers, Ronald Cybyske might not be in such an awkward spot when he sends out bills.

But as senior vice president of Banc One Services Corp., Mr. Cybyske gets paid by affiliates of the same holding company that he works for.

Like a growing number of banks across the country, Banc One Corp., Columbus, Ohio, established an autonomous company in a remote location to provide data processing services to affiliated companies. Under these arrangements, each department is charged for the services it uses. Department managers – "end users" in data processing parlance – are held accountable for the costs they incur.

This is the case at 46% of banks that responded to the 1989 *American Banker* technology survey. The survey, by the newspaper's research affiliate, Trans Data Corp. in Wayne, Pa., reached 381 bankers from institutions with at least $75 million in deposits.

The proportion that formally charge end users rises with bank size, to 74% of those with $2 billion or more in deposits. Only 18% of institutions between $75 million and $100 million do the same on some or all of their operating services.

Banks impose the charge-back policy as a means of management and spending discipline: It encourages bank executives to view data processing as an independent business unit, and often as a profit center. And it forces users to seek the best value for their money – they can take the business to outside processors instead.

Thus, it should come as no surprise that the biggest banks with the largest technology budgets and the most sophisticated operations have adopted this strict method of intracompany accounting.

"We know a lot about technology and a little about banking, and our customers know a lot about banking and a little about technology," said Mr. Cybyske of Banc One Services. "As an organization, we need to put those strengths together to develop products and price them in accordance with the marketplace."

Mr. Cybyske, who said he deals with customer complaints just as any other company head would, is typical of other in-house data processing providers at major banks.

"It's like the squeaky wheel that gets the grease," said William Synnott, director of banking technology for Nolan Norton & Co., a Lexington, Mass., consulting company. "The guy who yells the most will get what he wants – but will have to pay for it."

If it were not for the charge-back policy, those who yell the loudest might hog a disproportionate share of back-office resources, shortchanging others who need them to serve customers better.

"We are trying to justify where the technology costs are coming from," said George Snelling, executive vice president for corporate development at SunTrust Banks Inc., Atlanta. Explicitly charging user departments "establishes accountability," he said, "and also provides the users the opportunity to control costs better."

Few True Profit Centers

Banking affiliates often have a monopoly over their clients' data processing business, but most say they will respond to end users' complaints and try to negotiate. Some in-house data processing providers, notably Security Pacific Corp.'s Security Pacific Automation Co., unabashedly tell users to compare prices and service levels and to go elsewhere if the in-house offering is not competitive.

Security Pacific Automation Co. is one of the few true profit centers in the industry. It tracks its net income and calculates its direct contribution to the parent company's bottom line.

The *American Banker*'s 1988 technology survey found that only one bank in eight with more than $250 million in deposits views some or all of its operations departments as profit centers. Charge-back policies are more common, having been adopted by 60% of the banks in that size range in the 1989 technology survey.

"If you shop around, you can always find a price that is lower than a given one we set," said Mr. Cybyske. "But on the average, we are competitive."

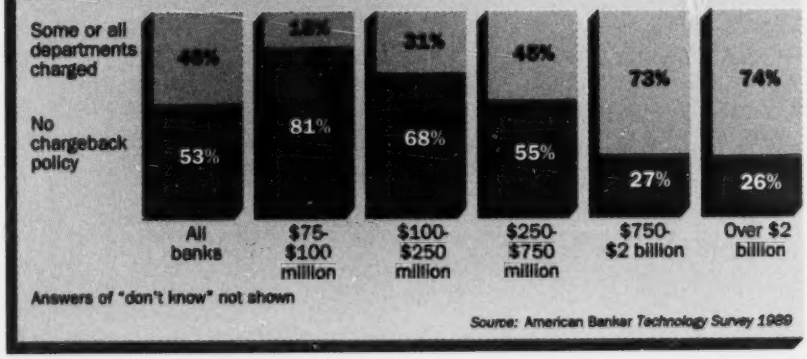
He pointed out that in addition to negotiating overall prices, he handles gripes on a one-to-one basis with clients.

"I'm trying to respond to a customer now about reappraising a service," said Mr. Cybyske. "We don't do volume-sensitive pricing, and he wants us to. We're looking into it."

— Jeanne Dugan Cooper

Charging The User

The biggest banks are most likely to make internal users pay for use of operations service. (banks grouped by deposit size)



Answers of "don't know" not shown

Source: American Banker Technology Survey 1989

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Back Offices Come On Strong As Generators of Profits

Bank technologists are not as focused on cost cutting as they have been in the past.

BY TOM LEANDER

Dispelling past stereotypes, bank operations managers increasingly view their departments as active contributors to profits and business growth, the *American Banker* technology survey has found.

This "profit center" view of the operations function is not unanimously held, but it is widespread enough to signal a sea change in the way bankers view their back offices. Once treated as a passive, factorylike support mechanism for business objectives, operations is now viewed as a source of profits by 39% of the 381 bank technologists in the survey.

Those 39% told researchers from Trans Data Corp., the *American Banker*'s research affiliate in Wayne, Pa., that they invest in bank technology primarily to boost revenues and otherwise generate new business. A slightly smaller number, 35%, said their principal technological objectives are to cut costs and staff.

The relatively even split between revenue enhancers and cost cutters seems to mark a retreat from the industry's virtual obsession with cost cutting, as was reflected in the 1988 *American Banker* survey.

"There's a realization in the industry that cost-cutting alone is a dead-end strategy," said Richard J. Fagan. Mr. Fagan is a principal at the Index Group Inc., a Cambridge, Mass., consulting firm.

"Bank technologists see future profitability as fundamentally a revenue problem and not just a cost-structure problem," said Mr. Fagan, who heads the Index Group's banking practice.

But the cost-cutting imperative is far from dead. Not only is it still the top priority of 35% of the sample representing banks with at least $75 million in deposits, it is a particularly strong motivator in the smaller-bank segments.

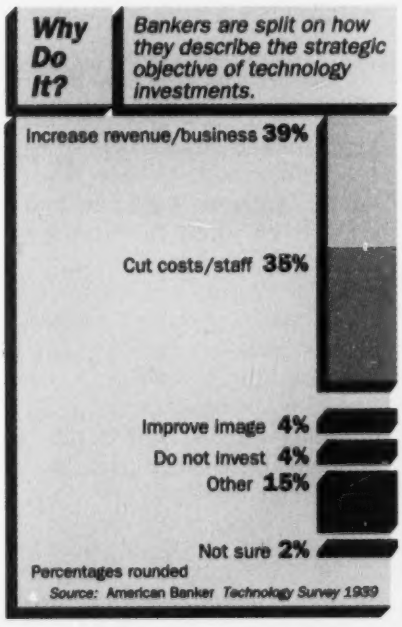
At banks with $75 million to $100 million in deposits, cost cutting was the preferred aim of 41%, revenue enhancement of 29%.

The split between cost cutting and revenue generating was almost even, 38% versus 36%, in banks with $100 million to $250 million in deposits.

The trend reversed among respondents from banks with between $250 million and $750 million in deposits, with 51% seeking revenue gains and only 22% citing cost-cutting goals. The largest banks in the sample, with at least $2 billion in deposits, favored revenue generation by 47% to 39%.

Last year, the *American Banker* survey found the cost-cutting culture far more entrenched. Seven of eight technology bankers in that survey said their operations departments were run as cost centers, playing supporting roles to line business units. Only 7% portrayed themselves as profit centers, adding directly to their corporation's bottom line. And 5% said they had partially adopted the costcenter philosophy.

Now, many banks see that cost cutting


Why Do It?
Bankers are split on how they describe the strategic objective of technology investments.
Increase revenue/business 39%
Cut costs/staff 35%
Improve image 4%
Do not invest 4%
Other 15%
Not sure 2%
Percentages rounded
Source: American Banker Technology Survey 1989

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and revenue generating are two sides of the same coin – what one banking executive characterized as the "double-edged sword" for attaining higher profits.

"There are two ways to generate profits: by increasing revenues or cutting costs. Obviously, bank technologists are interested in doing both," said Diogo Teixeira, a McKinsey & Co. consultant.

"We need to increase revenues and cut costs to support the acquisition growth of the corporation. You have the ultimate edge if you're a low-cost provider," said William L. Czerniewicz, vice chairman of Security Pacific Automation Co., Los Angeles.

"There's a lot of downsizing," added Elaine Bond, senior vice president and technology chief at Chase Manhattan Bank, New York. "Banks are exercising care and selectivity to make sure investment dollars go far."

In setting investment priorities to achieve their technology goals, whether to cut costs or boost revenues, most bankers are currently looking first to the personal computer. The survey indicates that the versatile, almost ubiquitous PC is likely to become even more integrated into bank operations.

Fifty-nine percent of the banks that focus most on revenue enhancement said that PCs will be an investment priority for the next five years, and 51% of the cost cutters said the same.

The strongest move to PCs was among banks with more than $2 billion in deposits. Seventy-four percent of the revenue generators in this category, and 62% of the cost cutters, said they viewed PC investments as a five-year priority.

The concentration on PCs reflects a "dramatic move to include more information delivery to trading floors and to relationship officers, to make sure they get the kind of support they need," said Ms. Bond of Chase. "Investment has been slower in the back-office and systems sides of bank technology."

Indeed, mainframe hardware and applications software did not come in quite as high as PCs on the five-year priority list in the *American Banker* survey.

Among all banks in the survey, applications software was mentioned by 39% of the cost-cutting bankers and 43% of the revenue generators. Mainframe hardware investments were listed by just over 30% of each group.

The percentages were higher among banks with at least $2 billion in deposits, the ones that make the bulk of bank technology investments. Applications software was a priority for 62% of cost cutters and 71% of revenue generators, mainframe hardware by 52% of cost cutters and 49% of revenue generators.

The interest in mainframe investments grew in proportion to the size of the bank, from 9% of the banks between $75 million and $100 million in deposits, to just over half of the group over $2 billion.

Lesser percentages of bankers listed such areas as minicomputers and departmental computing, electronic funds transfer systems, voice and data communications, and even technology-based personnel training.

"There's a lot of interest emerging in specific areas" at larger banks, said Ms. Bond. "Imaging technology is still the newest and brightest. It's hot. But large banks are also interested in expanding networks over a larger geographical span."

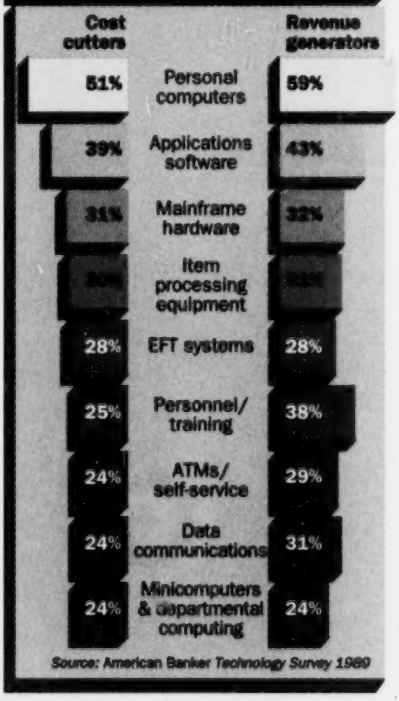
Fifty-two percent of the banks with more than $2 billion in deposits said they are investing in check and document processing equipment, which would include the imaging technology. Conversely, only 15% of banks with between $75 million and $100 million viewed imaging technology as a priority.

As for data networks, it is clearly a priority for big banks – 59% of the cost cutters listed them, as did 54% of the revenue generators. Among the entire sample in the survey, data communications was well down on the ranking, named by 24% of cost cutters and 31% of revenue generators.

"The smaller banks are asking, how do we tighten up the back room and cut back on labor?" said M. Arthur Gillis, a technology consultant to small and medium-size banks. Mr. Gillis heads Computer Based Solutions Inc. in New Orleans. □

Five-Year Investment Priorities: All Banks

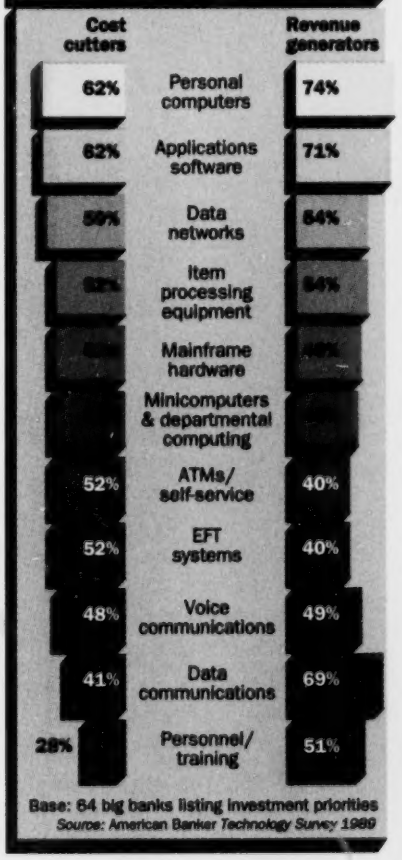
Regardless of a bank's objective, (cost cutting or revenue generating) personal computers are most often mentioned as an area of spending.



Source: American Banker Technology Survey 1989

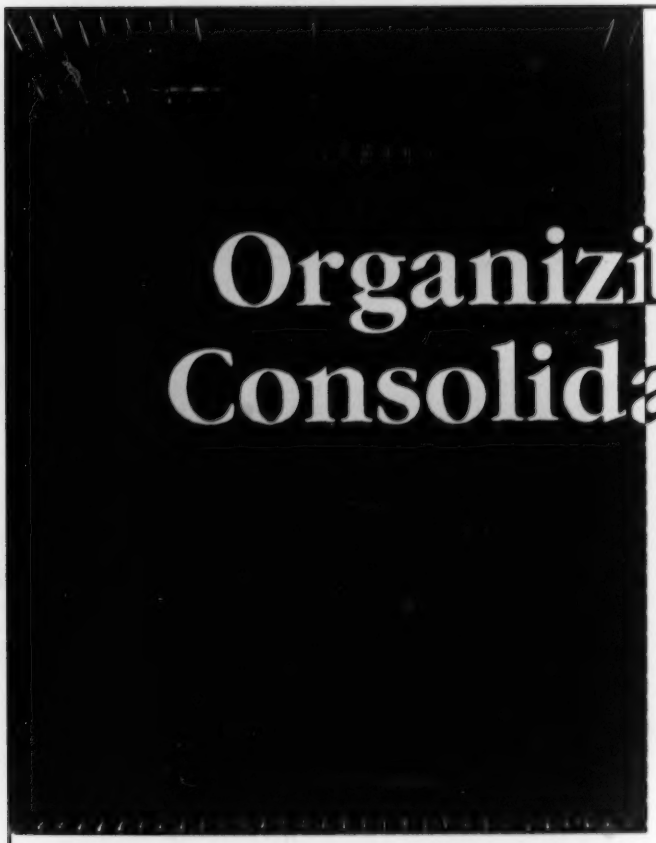
Five-Year Investment Priorities: Big Banks

Banks above $2 billion in deposits have more priorities than smaller banks. Personal computers are most popular investment, regardless of objective (cost cutting or revenue generating).



Base: 64 big banks listing investment priorities

Source: American Banker Technology Survey 1989



Organizing/ Consolidating

Decentralization of bank data processing is giving way to tighter control. This trend is probably because of the merger wave, in which holding companies are supervising their growing networks more closely. Large banks are starting to realize some economies from computerization and the consolidation of back offices, but their smaller brethren are still spending proportionately more on operations.

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Back Offices Recentralizing As U.S. Banking Consolidates

Holding companies, cost woes make coordination from center popular again in the industry.

BY JEFFREY KUTLER

Decentralization, which was all the rage in bank data-processing management during the 1970s, is going the way of manual typewriters and adding machines.

In the wake of the bank merger wave, most holding companies now exercise at least some control over subsidiary operations, according to the *American Banker* technology survey. The industry has reined in the total operating freedom that many bankers once thought necessary for remote business units to be responsive to their markets.

More than half the bank technology managers surveyed reported that parent companies influence their back-office operations. One in five said holding companies were "mostly" or "totally" in control. Many banks not in holding companies also have centralized operations departments.

These were among the findings of the third annual *American Banker* survey of operations and technology executives. Trans Data Corp., the newspaper's research affiliate in Wayne, Pa., gathered the information last June and July in telephone interviews with 381 officers of banks with at least $75 million in deposits.

The predominance of the holding-company structure, disillusionment with decentralization, and general cost-cutting pressures have made central coordination fashionable again.

"Decentralization, the way people talked about it years ago, is dead," said Michael R. Zucchini, executive vice president and chief information officer of Fleet/Norstar Financial Group.

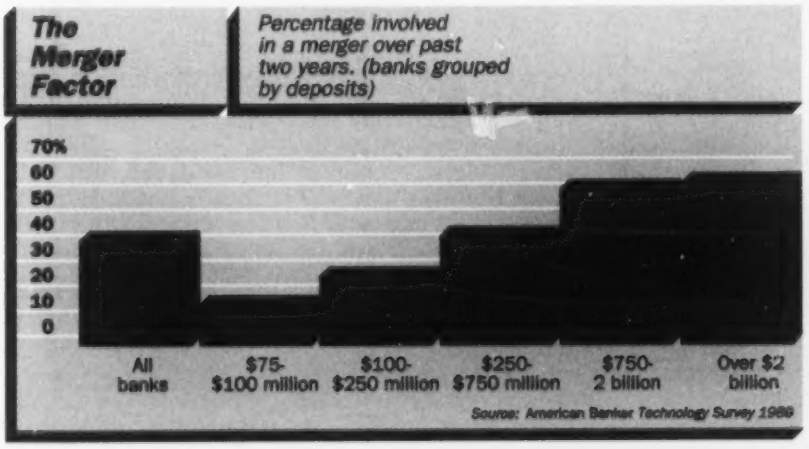
The Providence, R.I., holding company is typical of the new breed of superregional that has consolidated back-office operations even as it expanded geographically. Where it once owned 12 data processing centers, Fleet now has one serving all banking subsidiaries.

"As long as the president of a [subsidiary] bank has the flexibility he needs to design and deliver products that serve his market, it doesn't matter where his processing is done," Mr. Zucchini said. "The banking business is homogeneous enough that a single data center can provide all the flexibility our presidents need."

Fleet's nonbank subsidiaries, however, get their processing elsewhere.

Banc One Corp., Bank of Boston Corp., First Union Corp., and Security Pacific Corp. are just a few of the other multistate holding companies that bring acquired banks under a uniform data-processing regime. Some are less dictatorial than others, but virtually all have revised the old decentralization doctrine.

"We don't want a different DDA [de-



Holding Company Control

Banks grouped by deposits.

	All Banks	$75-$100 million	$100-$250 million	$250-$750 million	$750 million-$2 billion	Over $2 billion
Banks in survey sample	381	80	88	77	62	74
Percentage in holding company	87%	85%	88%	82%	94%	91%
Percentage reporting holding company influence over operations	66%	52%	55%	67%	85%	76%
Index of holding company influence*	3.12	2.62	2.93	3.26	3.33	3.29

*Scale of 1 (no control) to 5 (total control)

Source: American Banker Technology Survey 1989

mand deposit accounting] system operating in every state," said William L. Czerniewicz, executive vice president of Security Pacific Automation Co., which has integrated the operations of several out-of-state banks acquired by its parent, Los Angeles-based Security Pacific Corp.

"A key component of our technology strategy is a conversion to common systems," said Mr. Czerniewicz. By 1991, he said, Security Pacific will have completed a single, nationwide deposit system more efficient and economical than the previous patchwork.

Citicorp Modifies View

Even Citicorp, the original preacher of the decentralization gospel in banking, has imposed at least a modicum of centralization.

It has set up a staff unit called the Citicorp Technology Office Inc., reporting to chairman John S. Reed. Its assignment is to balance the inherent chaos of decentralization with the practical need to coordinate and share information among Citicorp's many business units around the world.

"Organizations are like governments," said Paul F. Glaser, chairman of the technology office. "They go through cycles of centralization and decentralization." And at Citicorp, the pendulum is swinging.

"We are still decentralized," Mr. Glaser said. "But for the first time, we are looking at synergies between groups. We are looking at how it all can come together."

The New York holding company's embrace of decentralized data processing was abetted by the minicomputer. By the mid-1970s, these relatively inexpensive processors became as fast and powerful as earlier mainframe computers, and far more flexible. Reasoning that a single back office would be too unwieldy to serve an institution its size, Citicorp decided to let line business managers control their own computer destinies.

The so-called distributed-processing approach was tailor-made for the decentralized-management theory that Citicorp adopted at the same time. The wide operating latitude granted to business-unit heads extended to data processing.

Critics claimed that Citicorp's radical brand of decentralization was wasteful, particularly when it stood in the way of economies of scale in some high-volume data processing tasks. Mr. Reed and his predecessor, Walter B. Wriston, said repeatedly that any added costs were outweighed by the benefits of keeping business units entrepreneurial and close to customers.

Citicorp's toned-down decentralization is reflected in its officials' rhetoric. While Mr. Glaser is careful to point out that the business units continue to "own" their systems, the Citicorp Technology Office has "oversight." It communicates systematically with every nook and cranny of the giant holding company, promoting and tracking new developments in computerization, telecommunications, productivity, and human resources.

"Our view is very pragmatic," said Richard S. Braddock, who heads Citicorp's individual bank. "We are not philosophers thinking about technology theory. We focus on how to apply it."

Holding Companies Are Key

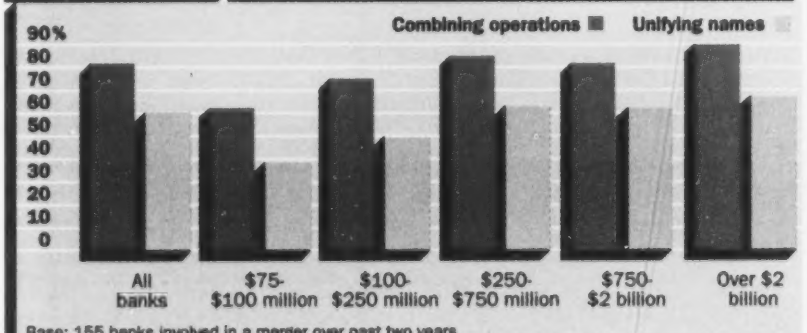
Pragmatism, and a strong dose of earnings pressure, go a long way toward explaining the widespread move back to centralization. Much of the impetus comes from holding companies seeking a better grip on their increasingly far-flung empires.

Seven of eight banks in the *American Banker* survey, and nine of ten with at least $2 billion in deposits, are in holding companies. More than half the banks above the $250 million threshold have been involved in mergers within the past two years.

The rise of multibank companies has accelerated the industry's consolidation more than has been apparent to many observers, with operating efficiencies a driving force.

Post-Merger Consolidations

Banks are more likely to consolidate or plan to consolidate operations than corporate identities.



Base: 155 banks involved in a merger over past two years

Source: American Banker Technology Survey 1989

A recent study by First Manhattan Consulting Group, commissioned by the Bank Administration Institute, said that commercial banking organizations number fewer than 10,000, though active bank charters total some 13,000. Multibank holding companies account for the discrepancy, and at recent rates of consolidation, 200 banking companies would be left by the year 2011.

First Manhattan concluded that operating synergies through consolidation become increasingly difficult as holding companies expand beyond their original market areas. The most successful superregional acquirers – including Banc One and Barnett Banks Inc. – have made a science of bringing distant operations into their fold, and shareholders have been rewarded with higher stock prices.

Another study of the motivations behind bank mergers, reported in the September-October 1989 *Economic Review* of the Federal Reserve Bank of Atlanta, found acquirers "are motivated most by the desire to diversify their earnings and growth potential – and in many cases to achieve economies of scale in the production of financial services."

Although few academic studies have found significant scale economies in banking, technologists do not need rigorous analysis to be convinced.

Banks involved in mergers within the past two years have been quicker to combine operating functions than to create a single marketing identity, the *American Banker* data showed. While 82% of recently merged banks have consolidated operations, only 61% have adopted uniform names.

Bankers involved in those mergers said they reduced combined operating costs by an average 11% – a far more tangible payoff than that of a new corporate identity.

"There are tremendous economies of scale to be realized in consolidations," said Kavin Moody, corporate information and technology director at Bank of Boston.

But the payoff does not come all at once. Only 11% of recently merged banks reported consolidating everything, but up to three-fourths had combined such important back-office components as host computers, data communications, programming, and self-service technology.

Mr. Moody described the search for lower unit costs through larger-scale operations as "an ongoing tactic" within his superregional retail bank.

Post-Merger Priorities

Responses by 127 banks that have merged in past two years.

Functions	Already combined	Average months required	Planning to combine	Identified as top priority	Identified as second priority
Everything	11%	NA	2%	—	—
Data processing	76%	7.8	17%	30%	7%
Data communications	74%	NA	17%	10%	3%
Programming and systems	71%	NA	14%	—	10%
ATMs/self-service terminals	69%	NA	14%	3%	3%
Consumer loans	66%	5.7	17%	3%	—
Mortgage processing	66%	NA	17%	7%	7%
Check processing	63%	NA	19%	10%	10%
Commercial loans	61%	6.0	17%	3%	10%
Credit cards	60%	NA	14%	7%	3%
Voice communications	58%	NA	14%	3%	7%
Corporate cash management	57%	NA	16%	—	7%
Branch automation	52%	6.8	20%	7%	10%
Trust operations	50%	6.4	13%	7%	13%

Source: American Banker *Technology Survey 1989*

An Index of Centralization

Large majorities of technology managers at holding-company banks in the United States reported that their parent organizations are heavily involved in systems development, purchasing, setting technical standards, and selecting equipment vendors.

Four of five holding-company members said their technology recommendations must get approval from above. This statistic held true across all size ranges, from $75 million in deposits up to some of the biggest banks in the country.

Holding-company bankers were asked to rate the degree of central influence on operating and spending decisions. Eleven percent of holding-company members, and 22% of those at banks larger than $2 billion in deposits, characterized that control as "total."

On a scale of 1 to 5, with 1 denoting no holding-company control and 5, total control, the mean score was 3.12. But banks with $75 million to $250 million in deposits averaged less than 3; larger banks came in at about 3.30.

And regardless whether banks have adopted the holding-company structure or remained independent, many basic operating functions are usually assigned to an internal, central management unit.

For example, data processing and host computer functions were handled centrally at 50% of all banks in the survey, and another 11% said a holding company took care of them. Branch automation was done internally by 52% (and at a holding company by 11%), accounting and bookkeeping by 55% (5%), data communications at 55% (13%), voice communications at 61% (8%), office automation at 62% (3%), and check processing at 68% (7%).

Among processing functions less likely to be centralized were mortgage loans, credit cards, and retail electronic banking, which tend to be offered through separate affiliates or independent service bureaus. □

Economies of Scale Glimpsed by Big Banks

Smaller institutions continue to employ proportionately more staff in operations.

BY JEFFREY MARSHALL

Banks are making some progress, albeit slow, in translating the gains from computerization into smaller back-office staffs, the *American Banker* technology survey shows.

Although bankers strive for economies of scale – the efficiencies that come with bigness – it remains axiomatic that the bigger the bank, the more people it employs in operations.

But banks with less than $250 million in deposits employ a larger proportion of people in operations than bigger banks. The statistic indicates that the bigger, more automated institutions enjoy an advantage in personnel costs and may be on their way to true economies of scale.

Still, the relationship between size and efficiency is not perfect. The biggest banks in the survey, with more than $2 billion in deposits, employ an average of 9% of their work force in operations. This compares with 8% at banks with deposits between $100 million and $2 billion, 13% at banks between $100 million and $250 million, and 15% at banks between $75 million and $100 million.

These are among the findings from the third annual survey of bank operations executives conducted for the *American Banker* in June and July by Trans Data Corp., a Wayne, Pa., research affiliate. For this year's survey, 381 bankers supplied the numbers of career operations and data processing professionals as well as total employment at their banks, from which the percentages were derived.

A year ago, responses from a different sample of 366 bankers yielded a similar split between small and large banks: Above $250 million in deposits, 6% to 7% of employees were in the technology areas, compared with 10% at the group under $250 million.

Averages for 1989 ranged from 10 career technology professionals out of 65 total employees at institutions between $75 million and $100 million, to 218 professionals out of 2,450 total workers at banks with more than $2 billion in deposits.

There is no sure indication of a reversal in the paradox of automation – the fact that staff sizes have increased continuously since the introduction of the computer more than three decades ago. But bankers and consultants see hints of change that could dramatically alter banks' staffing needs.

They say new technologies, such as image processing and a greater reliance on outside service providers, could markedly reduce staff growth.

"With image technology there is real potential for labor savings and significant head-count reductions," said John Shain, president of Littlewood, Shain & Co., a Wayne, Pa., technology consultant. In image processing, data on paper checks and other documents are converted into electronic form for swifter handling.

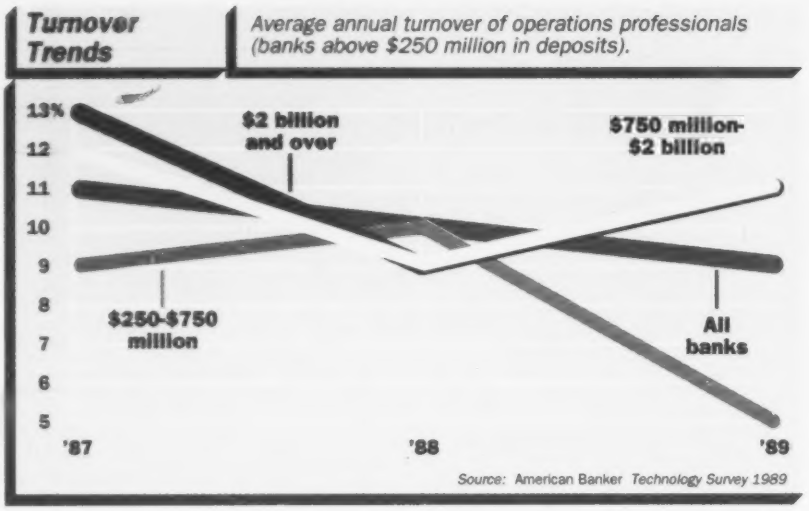
"That generally calls for centralization. The people that were decentralized

Personnel Scoreboard

At the average bank in the 1989 survey, 9% of 639 total employees are career operations and technology professionals. The percentage falls as size of bank increases up to $2 billion. (averages per bank, grouped by deposits)

	All Banks	$75-$100 million	$100-$250 million	$250-$750 million	$750 million-$2 billion	Over $2 billion
Operations/technology professionals	58	10	15	20	66	218
Total employees	639	65	115	270	825	2,450
Operations as percentage of total	9%	15%	13%	8%	8%	9%
Annual turnover rate	6%	3%	2%	5%	11%	11%

Source: American Banker *Technology Survey 1989*



to the branch offices would be brought back," said Mr. Shain, whose firm was commissioned by the American Bankers Association to study the potential for moving traditional banking documents to the advanced, electronic method.

"We're likely to see this throughout back-office operations – areas like credit card, loan processing, etc., anywhere vast numbers of papers are involved," Mr. Shain said. "The largest banks would have the scale, and it does involve economies of scale," he added. "It's a true capital-for-labor trade-off."

Michael R. Zucchini, executive vice president and chief information officer of Fleet/Norstar Financial Group, Providence, R.I., agreed that image processing will be a potent force but said its widespread use is probably three years off.

Image processing "requires a major capital investment, so banks will look for ways to use that technology without incurring all the cost," said J.D. "Denny" Carreker, president of J.D. Carreker & Associates, Dallas.

Mr. Carreker foresees the rise of what he calls "operational utilities" – consortiums formed to create and sell services to medium-size and smaller banks that are unwilling or unable to make such major capital expenditures themselves.

"Fewer support people will be needed down the road. Banks will be buying services from other people and will need fewer in-house," he said.

Future advances in software and personal-computer technology also promise big personnel savings.

Already, one systems house, Intelligent Bank Management Inc. (InBank) in Danbury, Conn., promises community bank customers that its turnkey system can enable a bank to add new services without a single programmer. "Even a high school student working part time can perform virtually every task in four hours with In-Bank," the company said.

Changes in Turnover Rates

Meanwhile, there is some good news on the turnover front this year. Average turnover among career technology professionals at all institutions surveyed was 9%, down a percentage point from last year and two percentage points from the 1987 *American Banker* survey. The rate plunged in the past year from 10% to 5% at institutions with $250 million to $750 million in deposits.

Turnover at the biggest banks, which fell from 12% in 1987 to 9% in 1988, was back up to 11% this year.

In 1987, 18% of responding banks reported professional turnover rates above 20%. That sort of hemorrhage has apparently ended; only 4% of this year's respondents said turnover was that high, and just 3% of the biggest institutions were in that category.

Turnover was a minuscule 1.2% at the smallest institutions, those with between $75 million and $250 million in deposits. In fact, 54% of institutions between $100 million and $249 million said they had no turnover in operations.

The job-hopping that does exist is hardly confined to the lower echelons. In a recent survey of chief information officers by Heidrick & Struggles Inc., an executive recruiting firm, more than half of the respondents said their predecessors had resigned or been dismissed. And a third of the CIOs said they expected to change positions within two years.

A considerable amount of turnover is driven by managements eager to cut costs to recoup acquisition premiums. But there seems to be a growing sense that head count reductions are more elusive than was once thought, and that integration of separate banks' operations requires extensive planning. This factor, along with a decline in the total number of mergers, may help explain the dip in overall turnover, particularly at small banks.

"In the long term, there's some value to integrating systems and operations as long as banks are in contiguous geographies," said Richard W. Spitler, a vice president at Booz, Allen & Hamilton, the New York-based management consulting firm. "If they're not contiguous, there seems to be very little value in trying to slam too much together."

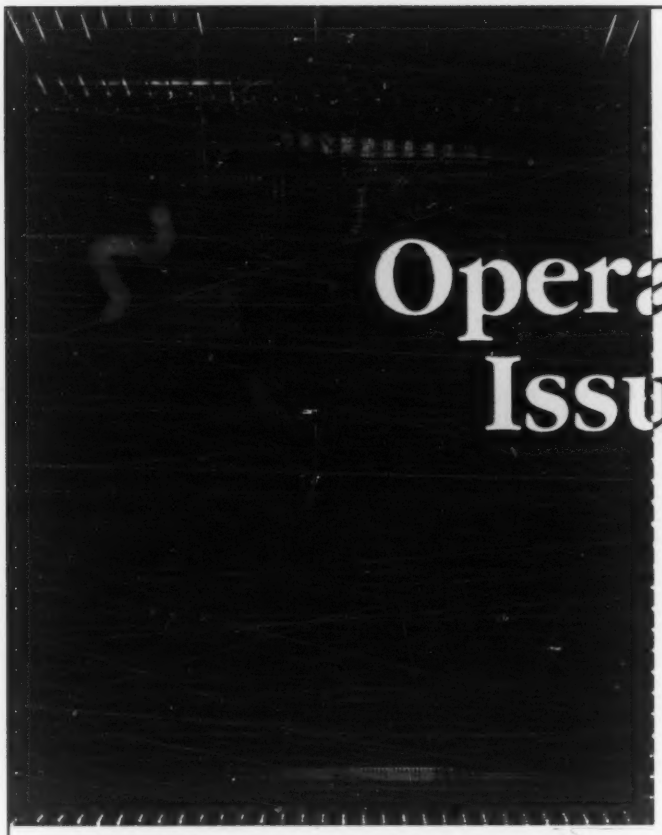
Fleet/Norstar Financial Group, which has gained a reputation as a savvy cost cutter, has implemented a number of steps to integrate several subsidiaries. Mr. Zucchini noted that the superregional company's banks are connected to a data center through remote telephone lines, reducing the need for operations staff at far-flung locations.

In terms of allocation of technology resources, little appears to have changed since 1987. The *American Banker* survey that year found that personnel costs (salaries and benefits) ate up about 40% of the operations budget, with systems (facilities, equipment, and maintenance) taking up another 40%.

Those percentages are essentially the same in the latest survey, with the "other" category dominated by functions performed by outside agents – 19% on average. At the biggest banks, which do a larger proportion of processing in-house, this outside budget was just 7.3% of expenses, compared with 25% at the smallest institutions.

The biggest banks will probably continue to keep most servicing in-house, Mr. Shain said, but he sees some third-party providers hanging on to contracts with small to medium-size institutions that are acquired by big banks.

The growth of third-party service vendors, which Mr. Carreker expects will thrive in the 1990s, will tend to reduce individual banks' personnel needs. Propelling that growth, he said, are geographic expansion and the big capital outlays needed to keep banks technologically competitive. Both factors make it more difficult for banks to run their own back-office operations. □



Operating Issues

Most banks give lip service to the need for disaster recovery programs, but few actually have adequate contingency plans. On another front, bankers who had complained loudly about Regulation CC found that speeding up the check-clearing process had a minor impact on operations.

- ♦ Life under Reg CC 28
- ♦ Nowhere to run 32

Reg CC's Bark Was Worse Than Its Bite, Bankers Find

Rule requiring swifter clearing of checks has not had much impact on costs, operations.

BY YVETTE D. KANTROW

Each and every bank was forced to comply with Regulation CC, which limits the holds banks place on deposited checks. But not every banker has found the controversial Federal Reserve Board rule overly burdensome.

One in three executives who responded to the *American Banker* technology survey said Reg CC had no measurable impact. The other two-thirds cited some impact on operations or costs, but when asked to quantify how much the regulation increased operating expenditures, the average reported rise was only 4%.

For the survey, Trans Data Corp., the *American Banker*'s research affiliate, interviewed the executives responsible for operations and technology at 381 commercial banks with at least $75 million in deposits. The Wayne, Pa., research company conducted the interviews by telephone during June and July.

The sizable number saying the check-hold rule had no impact – including 20% of the respondents from banks with more than $2 billion in deposits – is surprising in light of the widespread alarm expressed by bank operations officials in 1988 as the Federal Reserve Board moved to enforce Reg CC. The regulation was mandated by the Expedited Funds Availability Act, which called for the elimination of excessive check-cashing delays by banks.

While drafting Reg CC, which took effect Sept. 1, 1988, the central bank was bombarded with close to 1,000 comment letters, mostly from protesting bankers and trade groups.

Asked if the regulation affected their divisions, 43% of the operations managers participating in the *American Banker* survey said it affected both expenses and operations in general. Another 13% cited only an expense impact, while 9% mentioned only operations problems.

As worded by Congress, the key aspects of the Expedited Funds Availability Act were the timetables limiting the holds on checks before banks cash them. But bankers were more concerned about the operational changes required to comply with other aspects of the regulation. For example, Reg CC called for a whole new way of routing dishonored checks back to the banks where they were first deposited. The changes in the return-item process were expected to be costly and difficult to make.

Yet, according to the survey, the final regulation had only a slight impact on the industry.

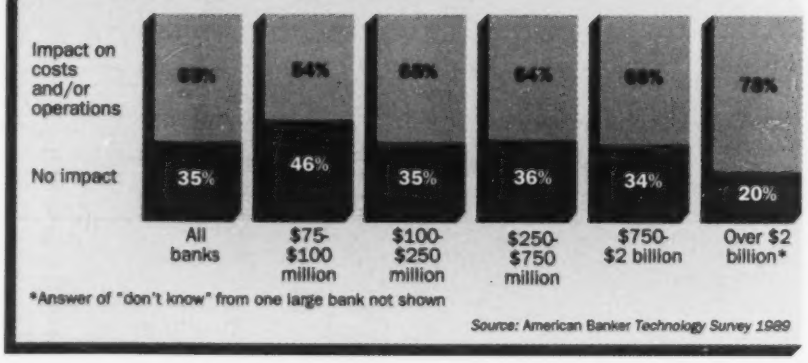
The findings demonstrate that "concern about Regulation CC has settled into a state of 'who cares?'," said Ned Miltko, a principal with Littlewood Shain & Co., a Wayne, Pa., consulting firm.

"The phenomenon in this is that the banking industry in general has tried to take a very low-key approach," Mr. Miltko said. But he warned that any attempt to "sweep Reg CC and its implications under the rug" could prove problematic when the permanent, still more stringent availability schedules of the lawtake effect.

Beginning Sept. 1, 1990, the maximum holding time on local checks will be reduced from three business days to two.

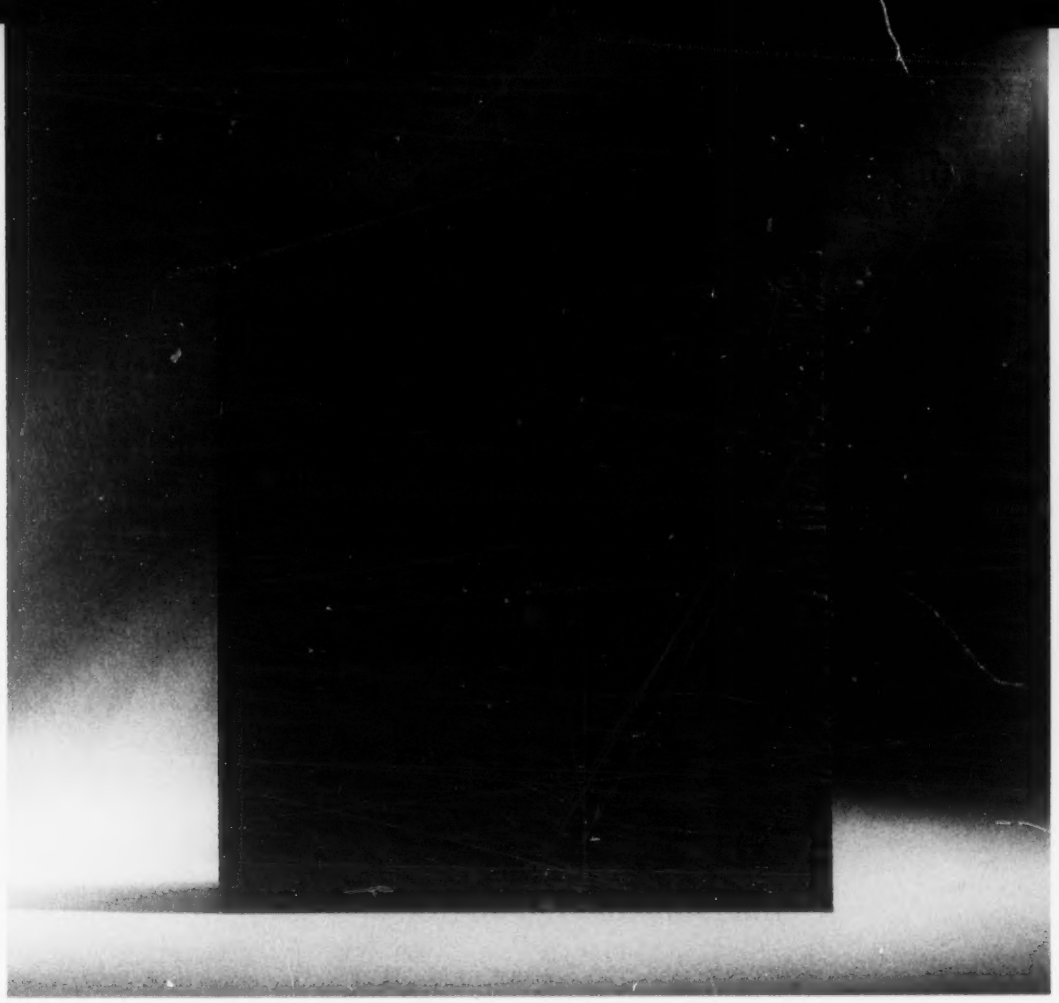
Widespread Impact of Reg CC

Two-thirds of all banks in survey, and three-fourths of the biggest, report measurable impact from check-holding regulations. (banks grouped by deposits)



*Answer of "don't know" from one large bank not shown

Source: American Banker Technology Survey 1989



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The shorter holding period will increase the possibility that banks will make funds available on items they later learn are not backed by sufficient funds.

Reg CC requires all banks to make at least some changes in their check processing operations. Endorsement standards changed, calling for new endorsing equipment, hence at least some additional expenses for all financial institutions.

But among 178 respondents to the technology survey who said their costs were adversely affected by Reg CC, the average spending increase was only 4%. The largest banks – with more than $2 billion in deposits – reported an average rise of only 2%. The smallest institutions – those with $75 million to $100 million in deposits – reported a mean jump of 5.2%.

"When you look at programming costs and people time, costs had to increase at least 10%," Mr. Miltko observed. Those costs would not include new return-item processing fees charged by Federal Reserve Banks – another byproduct of Reg CC.

Only eight participants in the *American Banker* survey sample owned up to cost increases above 10%.

"Some of the people might have assumed that you were talking about their costs after the initial implementation costs," Mr. Miltko said.

George F. Hall, an executive vice president at CoreStates Financial Corp., Philadelphia, offered another explanation for the seemingly underwhelming reaction to Reg CC: "You had many people giving next-day availability already, so they didn't have to change anything to comply with the law. It was probably closer to a nonevent than what it was forecast to be."

Although a 4% cost increase may be lower than what some observers projected, it still represents a significant sum of money, said Gerard F. Milano, executive director of the California Bankers Clearing House Association in San Francisco.

"You're talking about the operating budgets of major banks. Even 1% of that is big dollars," he said. But like other industry experts discussing the survey results, Mr. Milano said that Reg CC has been put on most banks' back burners.

"If I'm the genius in charge of operations for Megabank, maybe I haven't even thought about what I have done for Reg CC," he said.

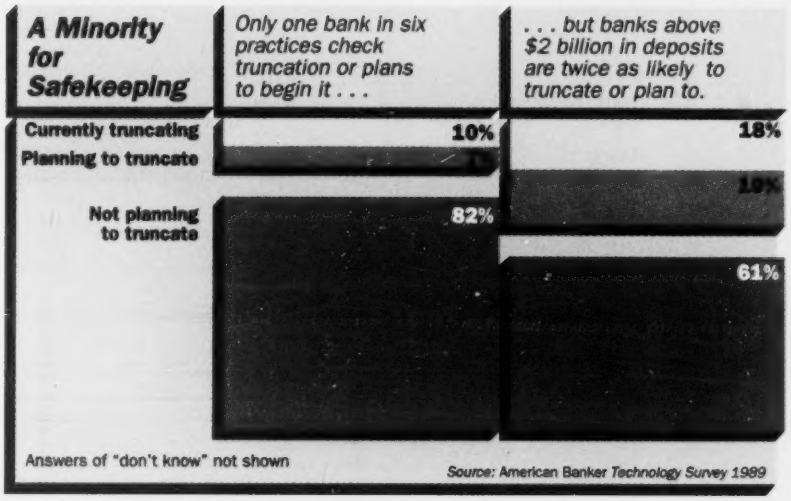
The check-hold regulation was also expected to spur interest in check truncation, or what is sometimes more euphoniously called "check safekeeping." But the outlook for truncation, in which checks are not returned to their writers, remains clouded for many bankers.

Only one in six survey respondents said their banks currently practice or plan to introduce truncation. A whopping 82% said they have no truncation plans at all.

But banks with more than $2 billion in deposits are twice as likely to truncate checks than smaller institutions. Eighteen percent of the big-bank group said they currently have safekeeping programs in place, and another 19% were planning to implement a program. One-third of those in the planning stage said it would take them more than two years to get a truncation program off the ground.

For the most part, proponents of truncation – which in its broadest form is both a back-office technology and a service that must be marketed to bank customers – say it can speed check collection and the return-item process. Opponents say it is hard to sell to consumers and poses security risks.

"Interest in truncation has gotten better, but it is not as good as it can be," Mr. Miltko observed. He predicted that the concept will win more champions as image processing systems proliferate at financial institutions. □


A Minority for Safekeeping
Only one bank in six practices check truncation or plans to begin it . . .
. . . but banks above $2 billion in deposits are twice as likely to truncate or plan to.
Currently truncating
Planning to truncate
Not planning to truncate
10%
82%
18%
19%
61%
Answers of "don't know" not shown
Source: American Banker Technology Survey 1989

The Cost of Reg CC

Change in operating costs attributed to check-hold rules. (among 180 banks providing cost data).

	All banks		Percent of banks by deposit size				
Cost Impact	Number of replies	Percent of total	$75-$100 million	$100-$250 million	$250-$750 million	$750 million-$2 billion	Over $2 billion
Up 16% and more	5	3%	3%	4%	3%	3%	—
Up 6%-15%	13	7%	6%	7%	9%	7%	8%
Up 1%-5%	160	89%	91%	87%	88%	90%	90%
Down 1%-5%	2	1%	—	2%	—	—	3%
Mean increase	4.0%		5.2%	4.5%	4.2%	4.6%	2.0%

Source: American Banker Technology Survey 1989

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Disaster Recovery: A Plan Waiting to Happen

Experts say responses to question on backup plans may be less than candid.

BY JEANNE DUGAN COOPER

More than nine out of 10 respondents to the 1989 *American Banker* technology survey said they have disaster-recovery plans in place, which should come as a great comfort after Hurricane Hugo in September and the October earthquake in Northern California.

But the finding does not reassure experts in the disaster-planning field. They fear that participants in the *American Banker* poll are giving the "right" answer, not the truthful one.

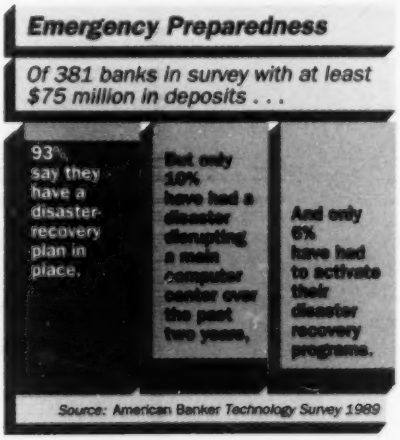
"They're saying that [they have disaster plans] because they have to," said Donald Miller, vice president in charge of risk management at First National Bank of Chicago, a bank with a reputation for a high level of preparedness should a natural or man-made disaster threaten its operations. He pointed out that all banks must have contingency plans to pass regulatory muster but said many were not in full compliance.

In the *American Banker*'s 1989 technology survey, 93% of the respondents from banks with $75 million or more in deposits answered yes when asked if they "have a backup plan should some type of disaster shut down your computer facilities for an extended period of time." The survey of operations officers from 366 banks was conducted by telephone in June and July by Trans Data Corp., a Wayne, Pa., research affiliate of the *American Banker*.

"Ninety-three percent is off the wall," said Richard Arnold, president of Disaster Recovery Journal and founder of a school for disaster-planning professionals in St. Louis. "I believe that 93% have said, 'Oops. I have to do something about disaster recovery.' "

Mr. Miller of First Chicago said less than 10% of the nation's banks have legitimate contingency plans in place.

Exactly what constitutes a full-fledged contingency plan is open to debate. The term seems to fit everything from an emergency checklist to an intensive program such as First Chicago's, which comprises 44 plans.


Emergency Preparedness
Of 381 banks in survey with at least $75 million in deposits . . .
93% say they have a disaster-recovery plan in place.
But only 10% have had a disaster disrupting a main computer center over the past two years.
And only 6% have had to activate their disaster recovery programs.
Source: American Banker Technology Survey 1989

Redundancy Is Extensive

In place since 1982, a year before the Office of the Comptroller of the Currency mandated disaster plans for all national banks, First Chicago's plan calls for extensive duplication of its computer files, which assures that operations continue even if some files are lost. The company also pays $50,000 to $70,000 a year for a contract with an alternate processing center, known as a hot site, to which it can turn if its main computer facilities are disabled.

Hot sites are the most common element of banks' disaster-recovery plans, with 38% of the survey's respondents saying they have contracts to use these facilities. Other popular methods of staying prepared – some banks choose more than one – included reciprocal backup agreements with other institutions, at 31%; similar backup arrangements within holding companies or with other affiliates, 23%; and reliance on computer service bureaus, 13%.

To illustrate the scarcity of contingency plans, Mr. Arnold pointed out that the alternate processing locations known as

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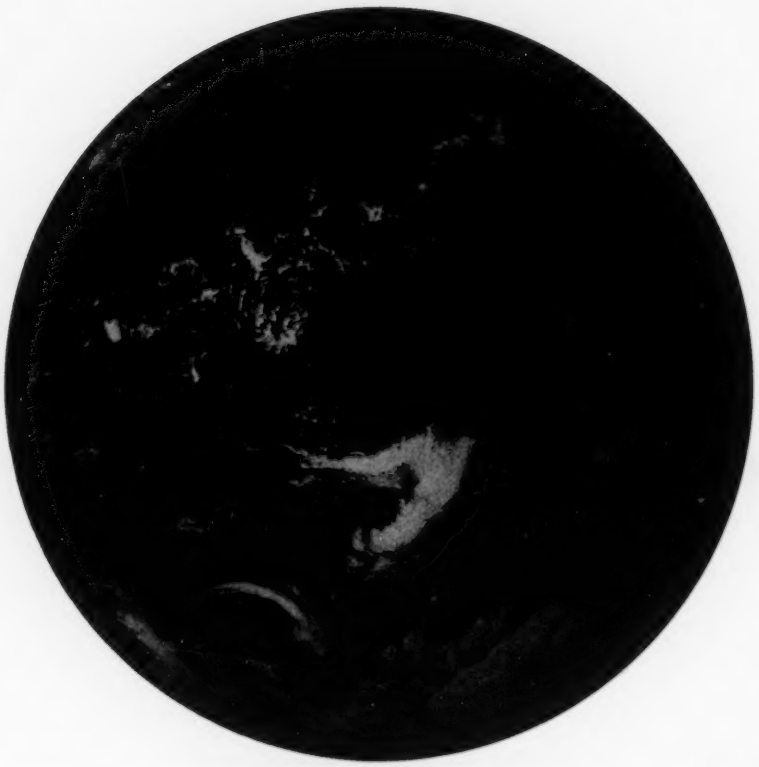
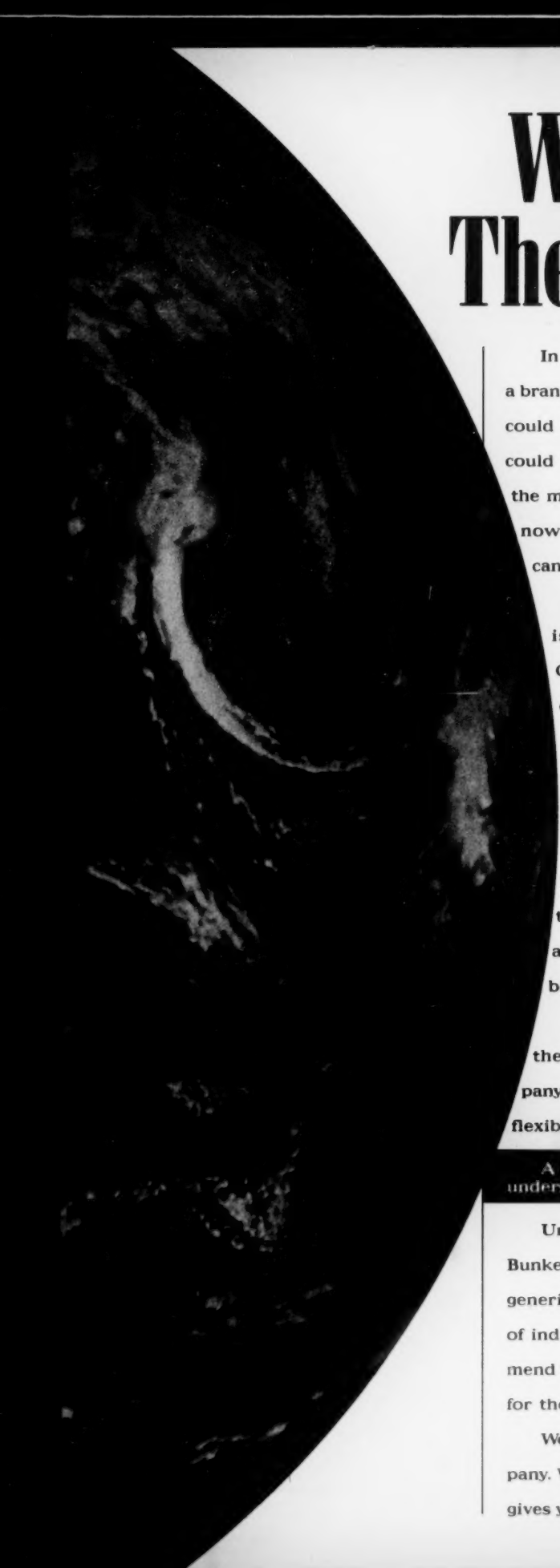


Think Very, Very Big.

And Think Very, Very Small.



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We're not just a hardware company. We're a systems company that gives you integrated solutions specifically for the financial industry.

At ISC-Bunker Ramo, our philosophy is simple. Create a system designed to fit your needs. Instead of forcing you to fit your needs into someone else's system.

We realize that one system isn't right for everybody. Sometimes PC/MS-DOS systems are right. Sometimes Unix and LANs are right. That's why we have both. So we can focus all our energies on helping you choose the total solution that's best for you. Not just the equipment we happen to be selling at the time.

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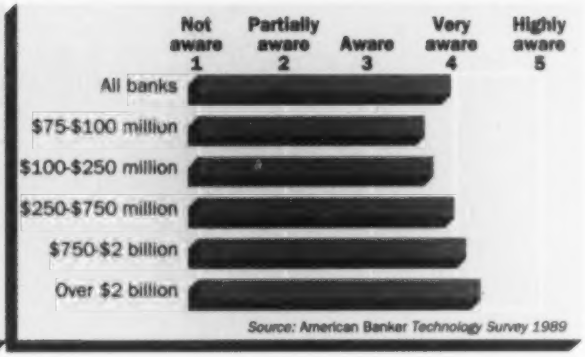
Awareness And Concern

Operations bankers give their senior managements high grades for commitment to disaster planning. (Mean scores on a scale of 1 to 5)



Source: American Banker Technology Survey 1989

hot sites are too few and far between to back up bankers' contentions that they have plans.

"There are only about 20 hot-site locations in the country," he said. "For them to handle 93% of the banks would be physically impossible." All those banks do not claim to have hot-site arrangements, but Mr. Arnold said that such arrangements would be necessary for a bank to be considered fully prepared.

Even banks that have gone to the length of paying for a hot site are not adequately covered, said Mr. Miller. Most hot-standby contracts assure banks that they will be able to resume operations within 72 hours, but "banks need to recover in an hour," he said. Perhaps 1% or 2% of banks have this capability, he added.

How Much Downtime?

"The real question banks must ask themselves is, 'How long can I be out of business before it adversely affects business?' " said Thomas Judd, director of the Federal Reserve System's contingency processing center in Culpeper, Va. "When you're dealing with the transfer of money and buying and selling of assets, it takes a very short period of time to have an effect on the economy."

The sluggish rate at which bankers are embracing disaster recovery could be explained by the low probability that they will face a serious problem.

Only 39, or 10%, of the 381 bankers in the *American Banker* survey said their computer center was disrupted by a disaster in the past two years. Only 23 respondents, or 6% of the total, said they actually put their backup plans into action.

The incidence of reported disasters tended to be higher for the smaller banks in the survey. Of those between $75 million and $250 million in deposits, 13% said they faced computer-disrupting disasters over the past two years. The same was true of only 8% of banks above the $250 million level.

As rated by the operations executives who responded to the survey, the commitment of senior management to disaster planning rises with bank size. At banks above $2 billion in deposits, 38% gave their top managers the highest mark – a 5 on a scale of 1 to 5 – for awareness and concern. Only 17% at banks between $75 million and $100 million said their managers deserved the "highly aware" designation.

On that scale of 1 to 5, the mean rating for all banks in the survey was 3.96. Banks above $750 million in deposits scored above 4. The lowest reading, 3.65, was again at banks under $100 million in deposits.

Mr. Miller said the lesser awareness and concern at smaller institutions may explain their greater susceptibility to computer outages. "It's hard for smaller banks to cost-justify a 'what if' scenario," Mr. Miller said.

Also changing with institution size are the choices for testing disaster-recovery scenarios. The average bank weighs three alternatives – the number rising with deposit size – and tests its plans in 1.3 ways.

The most common procedure is full operational testing, cited by 41%, followed by mock disasters, 38%, and document reviews or walk-throughs, 31%. Each of these is occasionally combined with a hot-site service.

> "Ninety-three percent is off the wall. I believe that 93% have said, 'Oops. I have to do something about disaster recovery.' "
>
> Richard Arnold
> *Disaster Recovery Journal*

Despite the disputes over the figures, experts said that bankers do well when stacked up against other industries.

"The banking industry is better off than just about any other industry," said Gregory Therkalsen, head of information security at Ernst & Young, the accounting firm. Bankers "haven't taken disaster recovery to the point where you feel comfortable that they will be back in business within a couple of days. But they are clearly the key industry in disaster recovery."

An official at one of the leading hot-site companies attests to this conclusion. John Butch, manager of the Hotsite division of Compusource, Cary, N.C., said that banks account for about 60% of his business.

During the last two years, Hotsite's business revenue has grown about 70% a year. And this year, the company was counting on a 50% growth rate, but that could be accelerated by the recent hurricane and earthquake, he said.

"We signed two contracts with financial institutions right outside the earthquake area after it happened," said Mr. Butch. "I think that people who almost had their plans ready quickly pulled them together."

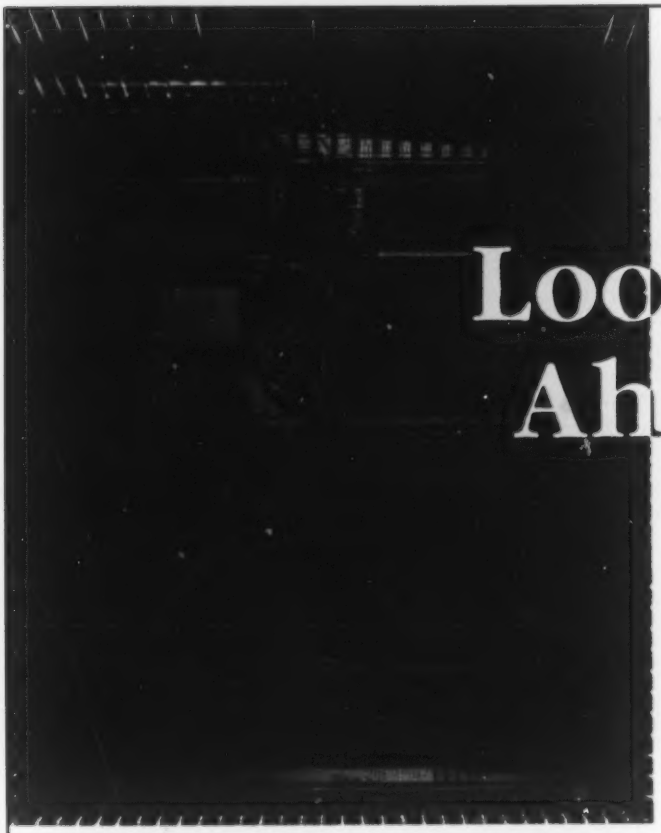
Officials Hope for Reaction

Federal officials say they are counting on the recent experiences to fuel their effort to encourage banks to institute disaster-recovery programs.

"Though we don't like them to occur, those kinds of natural disasters definitely help our cause," said Jerry E. Jones, deputy director for electronic data processing and management information systems control at the Office of Thrift Supervision.

Disasters aside, Mr. Jones wields a powerful stick. He is chairman of the Federal Financial Institutions Examination Council's task force on electronic data processing. That puts him in charge of overseeing the mandate for banks to back themselves up. The problem is that the rule is devoid of guidelines, deadlines, or repercussions.

And some bankers are skeptical that peers will jump into action even with large-scale disasters in recent memory. "That 7% who said they didn't have any plans in place, they clearly won't be motivated by these disasters," Mr. Miller said. "If the regulatory bodies can't motivate them, I don't know what will." □



Looking Ahead

Although banks are relying more on technology to boost profits, R&D budgets are down and group efforts look like the best hope for new applications. Among established technologies, the future looks brightest for image processing and electronic data interchange. Voice-response systems have so far failed to live up to expectations.

- ♦ R&D goes begging 38
- ♦ Crystal-ball gazing 44
- ♦ Voice response falls flat 48

R&D Spending Still Cautious, But Group Efforts Gain

Funding tends to go to the practical Edisons rather than the theoretical Einsteins.

BY SUZANNE CHRISTY

Bank technology executives say they focus on the future, and the *American Banker* survey found many of them have the research-and-development budgets to prove it.

But the percentage of banks making research-and-development commitments has fallen since the first *American Banker* technology survey in 1987, indicating a more practical and cost-conscious attitude. As one industry technologist put it, the pragmatic Thomas Edison would have a field day in a bank R&D lab, but the theoretical Albert Einstein would not fit in.

Futuristic projects that do not promise relatively short-term returns on investment may be falling victim to the industry's general cost-cutting mania. The number of banks above $250 million in deposits reporting a formal R&D program fell to 20% this year from 35% in 1988. Trans Data Corp., the Wayne, Pa., research affiliate of the *American Banker*, obtained these results in telephone interviews with 213 technology executives last June and July.

The R&D decline was less drastic at the industry's technology "haves" – banks larger than $2 billion in deposits. Those with R&D areas fell to 38% from 41%, a statistically insignificant change. In 1987, the number was 43%.

The big banks continue to set themselves apart in technological proficiency, not just through dollars spent but through what George DiNardo of Mellon Bank views as the pragmatic approach to R&D.

"When we try to produce the pie-in-the-sky, Einstein-type research, we fall down," said Mr. DiNardo, an executive vice president at the Pittsburgh bank who is regarded as one of the industry's technology leaders. "With the Edison-type research – taking technology and implementing it – we do better."

The work banks characterize as R&D tends to be development of existing technologies that can be put to use rapidly, rather than the pure research of untested concepts as practiced at industrial, high-technology, and consumer-product companies.

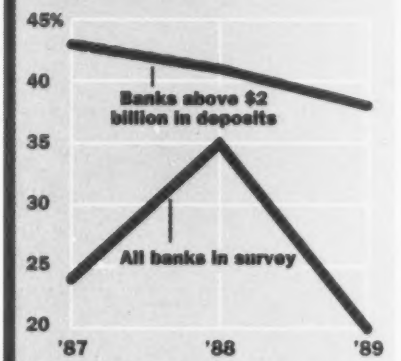
The dip in banking R&D can be attributed to numerous factors: merged banks have consolidated their R&D departments; budgets have been cut across the board; and recessionary fears have scaled back long-range planning.

'Not a Good Sign'

Whatever the reasons, the results are potentially dangerous: At a time when many banks' long-term survival is more

Research & Development

While more banks claim to be looking technologically ahead, the percentage with formal research and development activities is declining — though less so at the biggest banks.



Bases: 213 banks in 1989, 204 in 1988, 181 in 1987, all with a minimum of $250 million in deposits

Source: American Banker *Technology Survey 1989*

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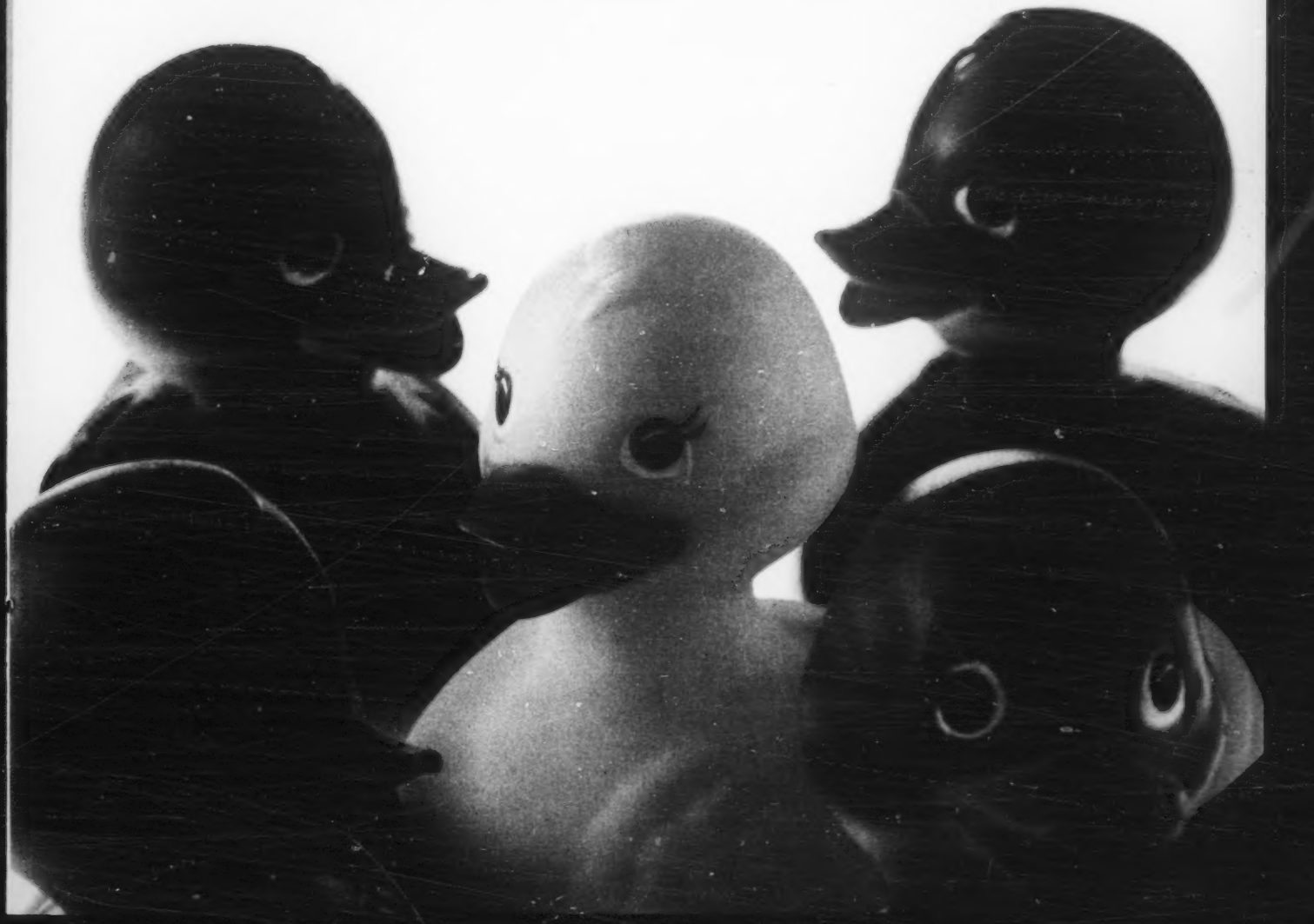

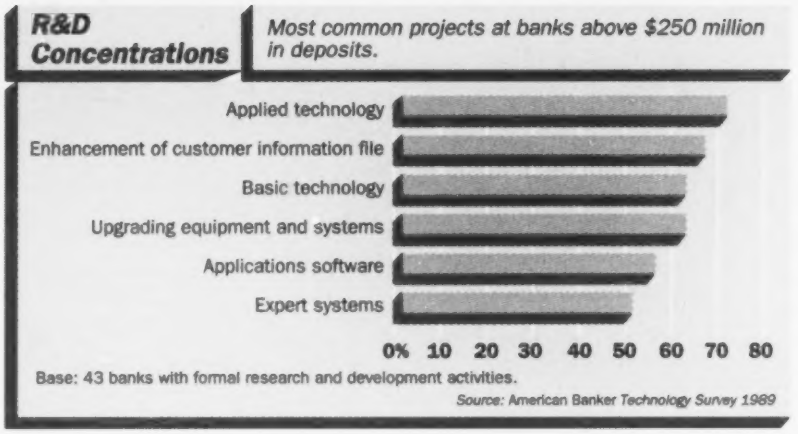
R&D Concentrations
Most common projects at banks above $250 million in deposits.
Applied technology
Enhancement of customer information file
Basic technology
Upgrading equipment and systems
Applications software
Expert systems
0% 10 20 30 40 50 60 70 80
Base: 43 banks with formal research and development activities.
Source: American Banker Technology Survey 1989

closely linked to technology than ever before, R&D strategies are being reevaluated.

"Bankers tell me they have products just sitting on the shelves because they can't get money to invest in developing the right mix of technology and hardware to make them work," said David Van L. Taylor, group executive for advanced issues research at the Bank Administration Institute, Rolling Meadows, Ill.

"It's unfortunate for the industry," he said. "It's not a good sign."

The survey results showed "a very clear picture of expense control – the driving force of the late 1980s," said Mr. DiNardo. "Frankly, [banks] don't make enough money to warrant a lot of dabbling in research."

"What you've also got [in the findings] is the merger effect," the Pittsburgh banker added.

The drop may be partially a reflection of structural changes in the shrinking industry, as R&D activity is consolidated from merged banks to holding companies.

"More and more banks are turning over the R&D activity to the holding company," said Patricia M. McGinnis, executive director of the International Financial Services Research Center at the Massachusetts Institute of Technology's Sloan School of Management.

But mergers and consolidations – which have affected a majority of the banks in the *American Banker* sample with $250 million or more in deposits – do not entirely explain the apparent pullback from back-office research.

Mr. Taylor of the Bank Administration Institute said the "drop is definitely a direct result of cost-cutting and earning problems."

Thomas Lindquist, director of Arthur D. Little Inc.'s Center for Financial Services Research and Development in Cambridge, Mass., agreed. In addition, he said, "there may be some anxiety that the economy is going to topple. We see some evidence that people are pulling in their horns."

Not a Complete Retreat

Still, some technology watchers, like Ms. McGinnis at MIT, say bankers should not be overly concerned about the survey results. "R&D is being done," she said. "It's just not being done in the same way it was a few years ago," as bankers have adjusted their priorities.

"People weren't ready for a lot of projects like AI [artificial intelligence] that banks were fooling around with a few years ago," Ms. McGinniss said. "People are redefining R&D as they go along."

Some banks are beginning to realize that the more traditional and formalized research operations that were popular a few years ago did not pay off soon enough to make the investments worthwhile.

Most of the R&D, said Mr. DiNardo, "was not as effective as it should have been.

"The point is, when you have some 13,000 banks, a lot of research was being duplicated. And the payback was not that great. The industry could stand a slight retreat."

Even Mellon Bank, which annually generates about $860 million in gross revenue from computer-based services, is feeling the pinch. "We're squeezing the buck here too," said Mr. DiNardo. "But we are putting money into R&D. We have to."

His enthusiasm has been tempered by the fact that "even though many are doing R&D, banks haven't had a productivity breakthrough, for example, in checks in 20 to 25 years. All we've really accomplished in banking is a lot of systems . . . a lot of spaghetti code," in the form of convoluted, unproductive software.

Difficult to Measure

Yet most experts agree that the results of R&D are not easily calculated. Moreover, long-term R&D projects cannot be evaluated quarterly as a component of short-term earnings, the yardstick by which most investors rate bank performance.

"Some bankers decided they had no business looking at R&D," said Mr. DiNardo. "Instead, they decided to put the money and resources where they could get more measurable results, such as in their M&A [mergers and acquisitions] departments."

The bottom-line mentality puts straitjackets on forward-looking bankers who would prefer some freedom from return-on-investment requirements.

"Let's face it. The real driver is the

> **"Bankers tell me they have products just sitting on the shelves because they can't get money to invest in developing the right mix of technology and hardware to make them work."**
>
> David Van L. Taylor
> Group executive, Bank Administration Institute

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> "For the medium-sized or smaller institution, R&D is probably not a relevant term. They don't need the R&D effort. In fact, they are not even utilizing all the technology out there that is already proven."

stock price," said Mr. Taylor. "It's a classic Catch-22 situation. If you don't do R&D, you lose [productivity and profit] improvements in the long term. If you do sink money into it, your current earnings may not be as favorable. How much can you afford to invest in unproven technologies? How much can you afford to put aside with the possibility of losing money?"

Half of the banks in the survey that conduct R&D activities said they have a line item in their budgets emblematic of that commitment. At some banks, R&D activity is decentralized among business units.

Focus on the 'D'

Still, few financial institutions seem to be conducting research in the purest rocket-science sense. Instead they concentrate on the 'D' – the development projects that can be completed within about a year, Mr. Lindquist said.

R&D is not restricted to technology alone. Often, a bank's marketing department plays a key role in defining long-range research projects. Hibernia National Bank, New Orleans, plans investments around identifiable customer needs.

Arthur Ryan, vice chairman at Chase Manhattan Corp., has defined R&D broadly: anything from a product to market planning, new market opportunities to technology with a long-term but substantial prospect of profitability.

The most common projects that banks above $250 million in deposits identified as R&D were not hard-and-fast research. Applied technology topped the list, mentioned by 72% of the banking companies listing their priorities. Others mentioned frequently were enhancement of customer information files (67%), basic technology (63%), upgrading equipment and supplies (63%), applied software (56%), and expert systems (51%).

The R&D preferences vary with the size of the institution. Banks with deposits under $2 billion report their top R&D projects to be the upgrading of equipment and research and enhancement of customer information files. Banks above this threshold report these issues as secondary priorities, focusing their attention in the areas of applied technology, including expert systems and other applications of artificial intelligence that emulate human reasoning.

None of it is true, down-and-dirty research, said Dennis Kuester, a technologist by training who is president of the $6.8 billion-asset M&I Marshall & Ilsley Corp., Milwaukee.

"For the medium-sized or smaller institution, R&D is probably not a relevant term," said Mr. Kuester. "They don't need the R&D effort. In fact, they are not even utilizing all the technology out there that is already proven."

M&I's computer services affiliate, M&I Data Services Inc., provides data processing to 400 financial institutions including 46 affiliates of its holding company.

As both a vendor and a banker, Mr. Kuester is quick to warn: "Banks at all levels should always be aware of what's happening around them, so they are able to take advantage of the new technologies and their competitors don't pass them by. Big banks like Citibank should be doing more, devoting some amount of money to pure dreaming."

If they don't, said Arthur D. Little's Mr. Lindquist, "the industry is at a tremendous risk. New entries from foreign countries and industrial companies are spending money on R&D. U.S. banks are at great risk of being blown away."

Outside Help

By nature, R&D in service industries like banking will never be as prominent as it is among manufacturers or government defense contractors. The trend to watch, said Ms. McGinnis of MIT, is "not how much R&D is being done, but where it is being done."

Bankers are leaving the classic, formalized research to system vendors, consultants, and specialized consortia like MIT's Financial Services Research Center. This partnership of the institute and 12 financial service companies – including Bankers Trust Co., Citibank, and Salomon Brothers Inc. – estimates it will spend about $3.75 million a year on about 25 research projects.

Ms. McGinnis said this setup and others like it are becoming a more common way for banks to conduct research. Work is also being sponsored by private industry at schools such as Brown University and Columbia University.

Often it is not the banks themselves that take the leading role in looking at the future. Financial services R&D is being conducted by industry-owned associations such as MasterCard International and Visa U.S.A., the Federal Reserve System, and technology vendors that form partnerships with banks to delve into new areas. International Business Machines Corp., which already puts a hefty 10% of its revenue into R&D, is building an application-solutions lab for banking.

Earlier this year, Arthur D. Little launched the Center for Financial Services Research and Development, which is sponsored by seven financial services companies.

"This is the way to do R&D for the next five to 10 years," said Mr. Lindquist. "Then maybe banks will learn enough about how to conduct research to bring it in-house."

Efforts like Arthur D. Little's are only a first step, Mr. DiNardo said. Bankers need to pool their resources in even bigger groups. "We need a big bank-research function in the sky – some sort of industry-sponsored entity," he added.

Only a few technological visionaries have suggested centralization of research – a radical notion in the still-fragmented banking community. Occasional calls for coordinated research from Mr. DiNardo and John F. Fisher, senior vice president of Banc One Corp., Columbus, Ohio, have gone unheeded by the American Bankers Association, which is perhaps the only body that could get the entire industry behind the idea. □

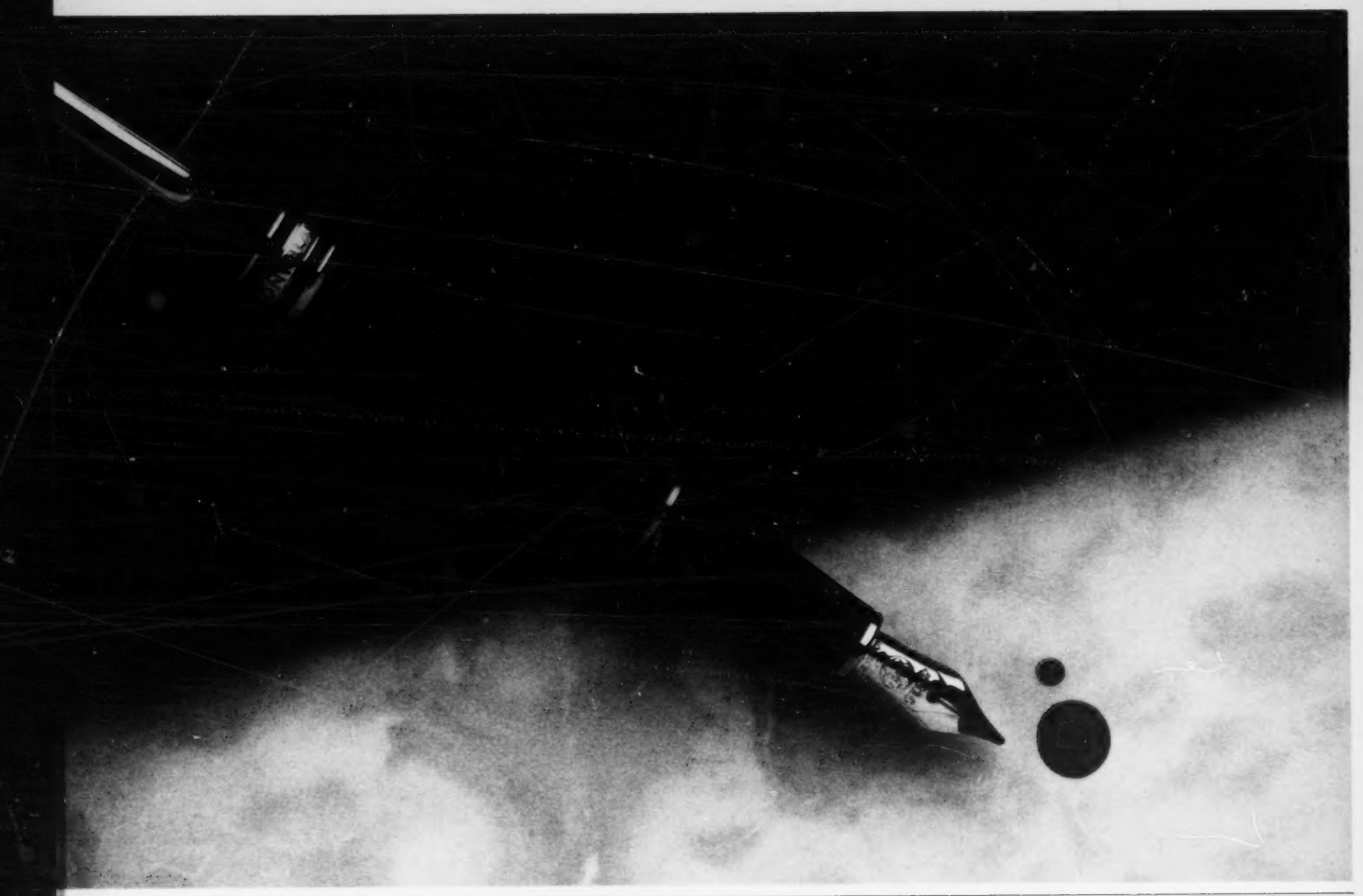

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Image Processing Sprints While Video Banking Jogs

Executives are expecting widespread use of imaging technology in five years.

BY JUDY FERRING

Image processing is hot, video banking is not, and both are likely to stay that way, bank operations executives are saying.

The two technologies landed at opposite ends of the scale when executives in the *American Banker* technology survey predicted the new systems and dataprocessing methods that will be in widespread use within five years.

Those views of the future coincide with the current conventional wisdom in the field: Image processing is already an established trend, while computerized banking at home has been on a downward slide for several years.

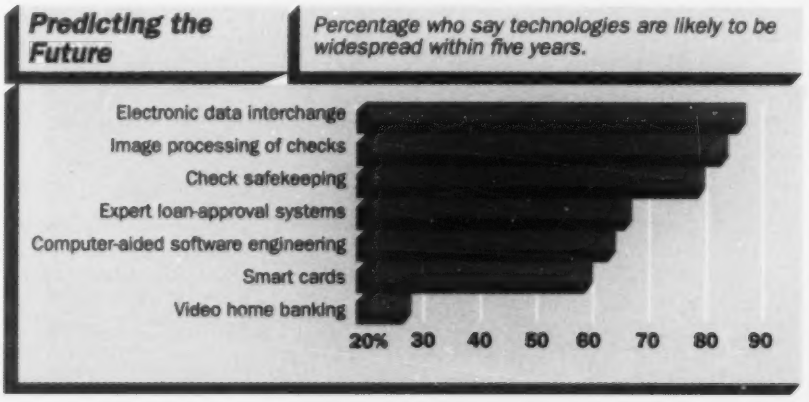
But operations bankers' optimism is up across the board, even with respect to video banking, compared with their attitudes two years ago, when the *American Banker* covered similar ground in its first technology survey. Four technologies assessed in the 1987 study – nonreturn of checks, expert systems for loan approvals, smart cards, and video banking – have significantly larger followings in 1989.

The 1989 survey, conducted by Trans Data Corp., the newspaper's Wayne, Pa., research affiliate, asked bankers to rate the likelihood that seven technologies will be widespread by 1994. The consensus of the respondents – 381 from banks with $75 million or more in deposits – can be measured in two ways: the percentage who view the development as likely to at least some degree; and the average score on a scale of 1 to 5, with 1 representing very unlikely and 5 the greatest likelihood.

Either way, the No. 1 new technology is electronic data interchange, a system for transmitting invoices and other documentation between corporations. Although many bankers are still trying to assess the role they will play in interchanges between corporate customers, the percentage viewing it as likely added up to 87%. On the scale of 1 to 5, it garnered a 3.67.

Image processing got an 84% likelihood response and a 3.61 rating, followed by the nonreturn of canceled checks with monthly statements – variously called check truncation and check safekeeping – at 80% and 3.52.

Another three technologies scored in the sixties: Expert loan-approval systems, in which computers do much of the work of credit analysts (67%, 3.05);



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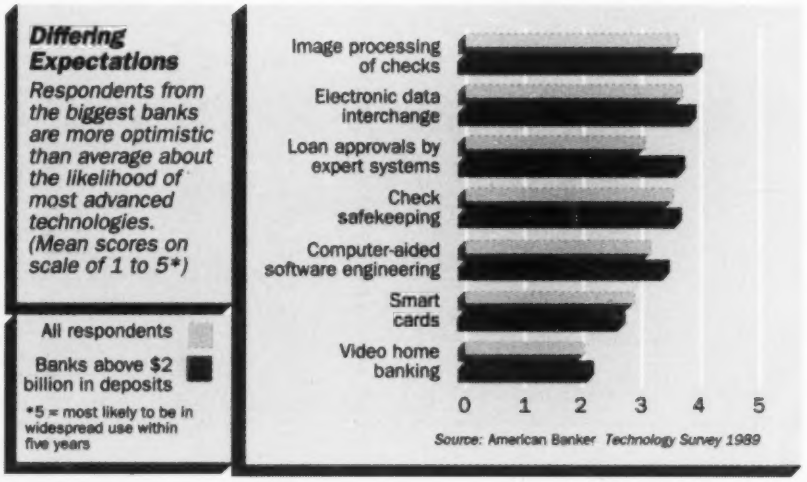

Differing Expectations
Respondents from the biggest banks are more optimistic than average about the likelihood of most advanced technologies. (Mean scores on scale of 1 to 5*)
All respondents
Banks above $2 billion in deposits
*5 = most likely to be in widespread use within five years
Image processing of checks
Electronic data interchange
Loan approvals by expert systems
Check safekeeping
Computer-aided software engineering
Smart cards
Video home banking
0 1 2 3 4 5
Source: American Banker Technology Survey 1989

computer-aided software engineering, which automates many of the tedious steps in computer programming (64%, 3.14); and smart cards, which have large-capacity computer chips embedded in the plastic (60%, 2.81).

Lowest on the list was video banking, at 28% and 2.02.

In all the cases except smart cards, executives of the largest banks – those above $2 billion in deposits – were more optimistic than the average. They gave image processing, for example, a mean rating of 4.01, well above the 3.61 given by all in the survey. The large bankers gave image processing their top score, followed by the general favorite, electronic data interchange, at 3.92, expert loan systems at 3.73, and check safekeeping at 3.67.

In the four areas where changes from two years ago can be measured, non-return of checks jumped to 80% saying it is likely within five years from 35%; expert systems to 67% from 36%; smart cards to 60% from 34%; and video banking to 28% from 12%.

The findings suggest that the industry's views on technological trends are converging. Most are moving toward image processing – prodded by consultants and even a recent American Bankers Association study that views it as a way to eliminate paper and people – and apologizing for earlier missteps in the video banking field.

Efficiencies Are Key

"The technology was there but not the market," said Jimmy Froneberger, vice president of NCNB National Bank, Charlotte, N.C., which wrote off a sizable investment in home banking. The experience encouraged NCNB and many other banks to focus instead on back-office efficiencies.

"Consumers are traditionally slow to accept new products unless they are entertainment oriented somehow," Mr. Froneberger said, "and banking is not entertainment. It ranks right up there with going to the dentist."

Decisions to buy into an emerging technology usually start with management's being convinced of its cost-effectiveness. Image processing has that going for it, assuming the initial expenditure is within reason.

In October 1988, First Tennessee Bank, Memphis, preceded the now popular march into image processing by investing $500,000 in a system designed to streamline its check processing area's research and reconcilement function. These are time-consuming tasks, which First Tennessee provides for 200 correspondent banks.

Seven months later, the system went on line. Staff productivity increased so dramatically that the system almost paid for itself by this fall, said Robert King, vice president of technology management.

"The writeoffs we were having to take when we couldn't clear checks in time were sending costs up," Mr. King said. "The problem was bound to become more acute as Regulation CC further cut the amount of time banks would have to clear checks." (That Federal Reserve Board regulation, which took effect in 1988, requires banks to make funds available to customers within a specified number of days after checks are deposited.)

Slashing Research Time

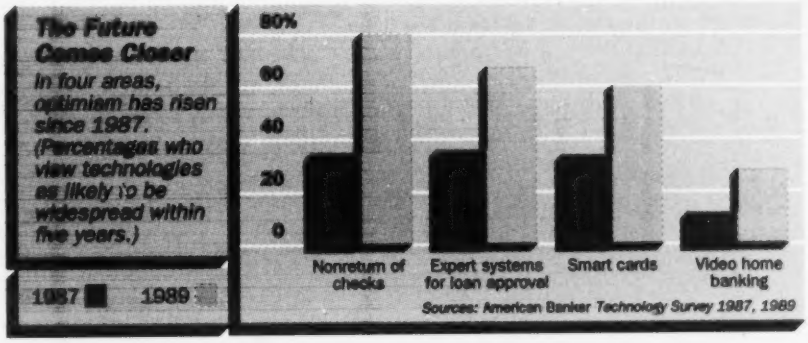
Personnel costs were also a consideration. Sometimes it would take 12 hours or longer to complete a search for an item. Clerks might have to sort through thousands of frames of microfiche to find a copy of a canceled check, then go to another area to reproduce the copy, and finally write up a report.

With digital image processing, Mr. King said, the entire job can be carried out at a computer terminal screen in "four seconds to one hour." That kind of time savings helped gain acceptance even from a sometimes wary staff.

Enhancing the system with still another technology, artificial intelligence, might cut the research time even further, the First Tennessee technologist said. Staffers could attend to other jobs or even go home while extensive, automated searches continue overnight.

"Banks that do not have image processing integrated into their back-office operations by spring 1991 are likely to be

> "Consumers are traditionally slow to accept new products unless they are entertainment oriented somehow, and banking is not entertainment. It ranks right up there with going to the dentist."
>
> Jimmy Froneberger
> Vice president, NCNB Bank, Charlotte, N.C.



in a bad competitive position," Mr. King predicted.

Still, with only about 5% of banks' paperwork now in electronic form, not everyone agrees that the age of image processing is so close at hand. "The question is how you implement it," said Charles Brummitt, senior vice president at NCNB National Bank. He expects to see the technology at his bank in 1990 but is vague about possible applications. On the consumer side, he speaks of value-added services, possibly offering yearend reports of checks written that represent tax-deductible expenses.

"Image processing can fit lots of niches," he said. "For instance, I wish we could kill all this paper on my desk – it's covered with it."

Standards Needed for EDI

Enthusiasm runs even higher for corporate electronic data interchange, known as EDI, but bankers are more in a quandary about it compared with image processing.

"The infrastructure is there now, but we need new standards and techniques for EDI, said Mr. Brummitt. "We need to develop industry-level standards so computers can talk to one another."

His caveat was echoed by First Tennessee's Mr. King, who said the technology will be brought into banking first by small businesses seeking to cut staff requirements. Although he expects "major offerings" in EDI within the next five years, Mr. King called the technology "an absolutely marvelous idea whose time hasn't come."

Several bankers said they have learned to look at new-technology issues with some skepticism to be sure they do not mistake their own enthusiasm for users' and customers' likely acceptance.

For example, the second annual *American Banker* technology survey, in 1988, found that 13% of operations executives at banks above $250 million in deposits were using or planning to use computer-aided software engineering, or Case. Elaine Bond, senior vice president for corporate operations and systems at Chase Manhattan Bank, was among the Case enthusiasts.

But Case at Chase "is coming more slowly than we anticipated," she said recently. "We probably could have gauged it better by looking at where it was going to be used. If [introducing a new technology] means changing something, management is likely to be more optimistic than it should be."

Ms. Bond acknowledged that Chase's slowness was due in part to back-office departments' lack of familiarity and enthusiasm for the technology. She described their attitudes with a sports metaphor: "If you're in the World Series, is that the time to change your batting stance?" She asked, wishfully, "Isn't there ever a spring camp?"

Ms. Bond said she does not agree with the 64% in the 1989 *American Banker* survey who said Case will be widespread within five years. "It certainly will be in widespread use by the end of the century," she said, adding that Case has become "something of a moving target."

First Tennessee's image-processing enthusiast, Mr. King, expressed greater-than-average expectations for smart cards. While 60% foresee the widespread use of this technology within five years, Mr. King said it would come within the next 24 months – but at first within bank operations, not among consumers.

Although retail point-of-sale devices are setting the stage for consumer usage, he said, the cards will find application in banking areas such as teller platforms, where they will save time in inputting basic information about consumer accounts.

The Consumer Must Want It

Having put video banking back on the shelf, NCNB's Mr. Froneberger is more restrained. There is potential, he said, but no application yet pinpointed that will drive consumer or user acceptance.

Thinking back on his video experience, he said, gauging consumer acceptance can be tricky.

"People who had it, loved it," he said. "I was one of them. But the product did self-select to that kind of enthusiasm, to those who were very PC-literate, even though the product didn't require that. I expect it to be more mainstream the second time around."

The second time around, video banking may ride the coattails of the growing telephone-banking phenomenon, Mr. Froneberger said. Those systems, using automatic voice-response systems, are "an audio version of what video banking really is," he pointed out. "But the video presentation is clearly better and will clearly prevail – although the two may coexist for a significant amount of time."

Whenever video banking does finally break out of the doldrums, he said, NCNB expects to use its previous experience to get a jump on the competition.□

> "Banks that do not have image processing integrated into their back-office operations by spring 1991 are likely to be in a bad competitive position."
>
> Robert King
> Vice president, First Tennessee Bank

Voice-Response Systems Fail To Strike the Right Chord

Vast majority of customers do not use the labor-saving devices if they are offered.

BY REBECCA COX

Banking services are just a phone call away when a bank installs an automatic voice-response system, but only the largest institutions have done so in significant numbers.

Despite a surge in telephone banking services over the past two years, only 33% of the banks surveyed for the annual *American Banker* technology survey have installed voice-response systems. These allow customers to communicate with a bank's computer by pushing buttons on a touch-tone phone; the computer responds with a tape-recorded or synthetic voice.

Another 13% of survey respondents are planning to install such a system in the future, and the remaining 54% said they do not plan to install a system.

At banks with more than $2 billion in deposits, there is a significantly greater interest in the technology: 51% have installed it and 12% more plan to.

For the voice-response portion of the survey, *American Banker* affiliate Trans Data Corp. in Wayne, Pa., questioned operations executives at 213 banks with at least $250 million in deposits.

The 33% penetration might be attributed to relatively low usage by customers. For the average bank in the survey, 13% of customers use the systems. Six out of 10 banks reported usage rates of 10% or less.

Many banks have installed the systems, which typically cost between $50,000 and $100,000, only within the past two years.

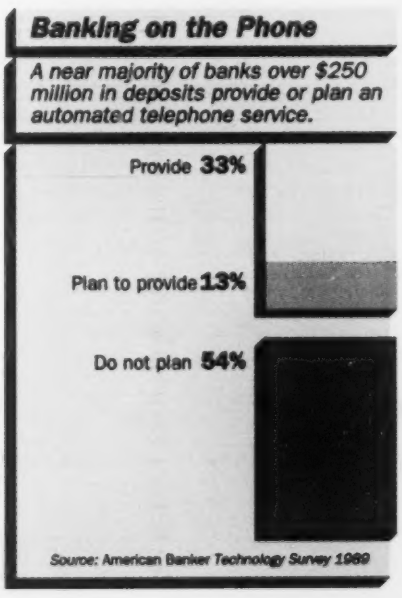
"We saw it start to catch on quickly in the last few years," said Hans G. Wenze, vice president of consumer credit operations for National Westminster Bank USA, New York. "We see it as a tremendously useful customer-service adjunct to the live service. It handles the majority of the routine inquiries."

NatWest began offering its service, called VoiceBeam, at the beginning of this year.

Most customers use telephone banking to get straightforward information about their bank accounts.

Balance inquiries, the telephone banking service that is offered most, were available from 92% of the surveyed banks with at least $250 million in deposits. The second most frequent application, customer service, is available from 80%, according to data provided by 71 banks participating in this portion of the survey.

About 65% said they use the system for internal purposes, 37% for telemarketing, and 27% for bill payments.


Banking on the Phone
A near majority of banks over $250 million in deposits provide or plan an automated telephone service.
Provide 33%
Plan to provide 13%
Do not plan 54%
Source: American Banker Technology Survey 1989

Cost-Cutting Measure

The interest in voice response is not surprising, given the widespread pressure to cut costs and streamline operations while improving customer service.

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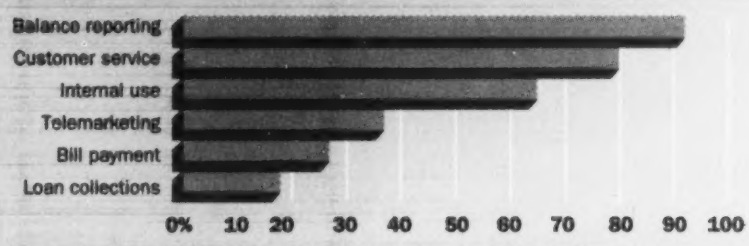
Push-Button Automation

Simple customer services and internal uses are the most frequent applications for automated voice reponse systems.



Base: 71 banks above $250 million in deposits that use voice response systems

Source: American Banker Technology Survey 1989

also let banks expand services without hiring additional staff.

"Telephone banking is less expensive than having an actual customer service representative handle a phone call," said James R. Clark, manager of the telephone banking center at National Bank of Detroit. The center was opened in June 1988, and the number of users has increased steadily, although Mr. Clark declined to give specific figures.

Mr. Clark said National Bank's extensive list of services gives his bank an edge over the competition.

"Basically, what you do in a branch, you can do by telephone," Mr. Clark said. "You can open accounts, apply for loans, obtain account information. We continue to be the only bank offering all of the services.

"Michigan National and Comerica offer some type of touch-tone service, but not as comprehensive as ours," he added. "I'm not sure if they intend to make it like ours, but I know they don't offer transfers between accounts."

Predictions Coming True

The recent installations of both National Bank of Detroit and NatWest indicate the relatively new direction of the technologies, an outgrowth of earlier enthusiasm.

In 1987, when the *American Banker* conducted its first technology survey, 46% of respondents from banks with more than $250 million in deposits said voice response would be in widespread use within five years. It was one of only three technologies – the others were desktop publishing and 24-hour global trading systems – that more than 40% of respondents thought would expand in that time frame.

Voice-response technology played a key role in the banking industry's early experimentation with telephone bill payments. Seattle-First National Bank pioneered the service in 1971, and by 1980 about 400 banks and savings and loans were offering similar services. Many institutions discouraged the use of rotary telephones, preferring to have customers interact at less cost with voice-response computers.

But automated telephone banking was short-lived. By 1982, bankers began to find there were limits in the number of consumers who found the service appealing. A majority of those bill-payment banks, citing the labor-intensive nature and high costs of the early systems, had gotten out of the business.

By 1986, however, a number of technological breakthroughs brought down the cost of voice-response systems and increased their sophistication.

A proliferation of vendors in the market has also made telephone banking more accessible and affordable.

Some of the top suppliers are IOCS, Waltham, Mass.; InterVoice Inc., Bohemia, N.Y.; Precision Software Inc., Clearwater, Fla.; the Newtrend Group, Orlando, Fla.; and Syntellect Inc., Phoenix.

Vendor Issues

One banker who has been offering telephone banking for several years said one of the problems he had to overcome was with the outside servicer his bank had selected.

"Years ago, we had a home banking system that was run by an outside firm," said Charles A. Maraziti, senior vice president and director of product development for UJB Bancorp, the parent of United Jersey Bank, Princeton, N.J. "Customers didn't like that service because the funds would be deducted from their account the first day, but the outside vendor would not send out the checks for two or three days. We made a decision about four years ago to bring that service in-house."

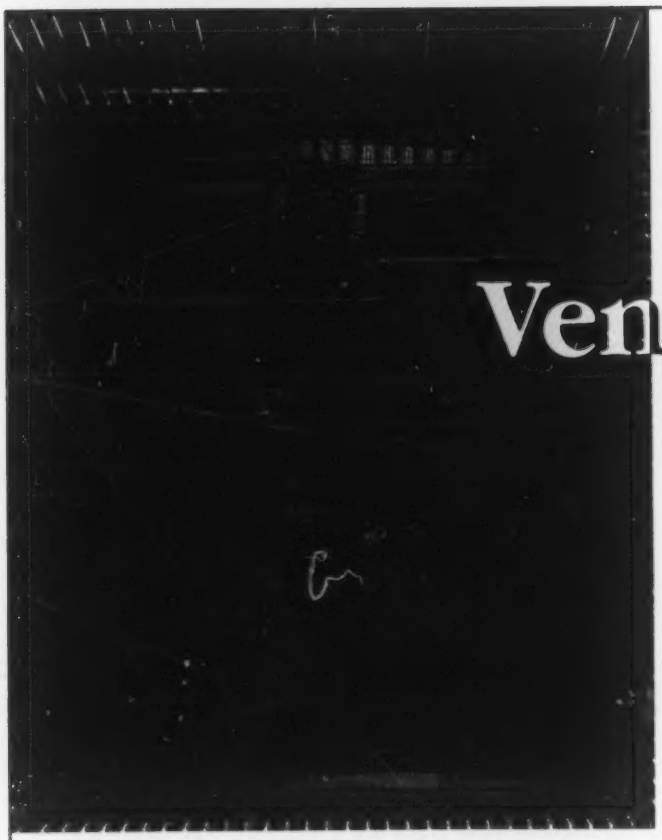
United Jersey now offers a Telephone Home Banking package that provides simple account information.

It also has customer representatives standing by 12 hours a day to handle more complicated transactions. National Bank of Detroit and NatWest also have human help available.

"We have a customer service center with an 800 number where you call in and talk to a live operator, and where you can obtain information on existing accounts, new accounts, and that center processes loan applications," said Mr. Maraziti.

"That's during the normal business hours, 8 a.m. to 8 p.m. After hours, we have a system that allows a customer to call in, and based on the numbers they punch in on the phone, they can get certificate of deposit and mortgage information," said Mr. Maraziti. □

> "We saw it start to catch on quickly in the last few years. We see it as a tremendously useful customer-service adjunct to the live service. It handles the majority of the routine inquiries."
>
> Hans G. Wenze
> Vice president, National Westminster Bank



Vendors

Big banks go to outside vendors more often for commercial lending systems than for demand deposit account and installment loan systems. Automated Financial Systems, a small vendor in suburban Philadelphia, sells the commercial loan system the largest banks like best.

- Banking application software 52
- Software tables 54

Small Software Vendor Wins Kudos from Big Banks

When it comes to hardware, IBM is still way ahead of the competition.

BY DAVID O. TYSON

A small company, wholly owned by its founder and located in the Philadelphia suburbs, sells a commercial lending system that is more popular among the largest banks in the country than any other core banking application software.

The 1989 *American Banker* technology survey shows that big banks go to outside vendors more often for such business loan systems than they do for demand deposit account and installment loan systems, the other two core applications covered.

In most cases, the vendor is Automated Financial Systems Inc., an Exton, Pa., company known as AFS and owned entirely by James E. Greenwood, founder and president. Forty-eight banks with more than $2 billion deposits run their business loans in-house on the AFS Commercial Lending System.

"We're probably in more than that," Mr. Greenwood said in a telephone interview. Indeed, the survey shows that eight banks in the $2 billion-plus group are converting to AFS from other packages.

But even without the newcomers, the 48 AFS clients are more than one-quarter of the 183 banks in the survey group. They are 40% of the 121 big banks that process commercial loans in-house, either on homegrown software or systems licensed from vendors. And the number exceeds the commercial loan systems licensed to 38 big banks by all other vendors combined.

This gives Mr. Greenwood a dominance in the market for commercial loan systems not enjoyed by any vendor of either demand deposit account or installment loan software. Yet his company has less than $9 million in annual revenues and about 100 employees, including 75 computer professionals.

AFS introduced its loan software in 1971 and now has more than 80 banks and thrifts using it under maintenance contracts. Others do their own upgrades. AFS itself is now up to Level III, version 7.1 of the commercial loan system and is branching into related software, such as customer service, interest reporting, and on-line collection support.

Among other commercial loan systems in use, Shaw Systems Associates Inc. is the licensee for 16 banks on the $2 billion-plus list; Kirchman Corp. for nine; Computer Associates International Inc. for six; Software Alliance Corp., with its M&I Data Services Inc. package, for four; and Systematics Inc. for three.

The markets for the other two core applications are more fragmented. In demand deposit account systems, 20 banks use the M&I Data Services system marketed exclusively by Software Alliance and 18 use the Integrated Deposits System of Hogan Systems Inc. They are followed by Computer Associates/M&I with 11, Kirchman with nine, Systematics five, Weiland Corp. three, and NCR Corp. one.

In installment loan systems, the most popular among the $2 billion-plus banks remains the software written originally by Kranzley & Co. and acquired successively by Anacomp Corp. and American Management Systems Inc., or AMS. Twenty-three banks in the group are now on maintenance contracts for the AMS version.

The other installment loan packages are those of Shaw Systems at 21 of the banks, Kirchman at 14, Computer Associates at 13, and Software Alliance/M&I, Hogan, and Systematics at four each.

The Pervasive IBM

The survey of large bank mainframes and core applications is conducted by the *American Banker* itself and is separate from the technology survey conducted for this newspaper each year by Trans Data Corp., a research affiliate in Wayne, Pa.

But whereas Trans Data ensures confidentiality to respondents and only re-

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leases aggregate figures, the *American Banker* lists the 183 banks with at least $2 billion in deposits and shows what mainframes and core applications they use. (The banks numbered 184 last June 30, but Bank of New York has since completed the merger of Irving Trust Co.)

In late September, the *American Banker* sent questionnaires to all those banks, addressed to the head of operations or data processing. Responses were supplemented by information from other sources, including vendors, and by the banks' responses last year.

No information was available for six banks on the list. And some respondents gave incomplete answers or indicated that questions did not apply. For example, Greenwood Trust Co., New Castle, Del., the nonbank bank owned by Sears, Roebuck and Co. to administer the Discover card, makes no commercial loans, and Industrial Bank of Japan, New York, makes no consumer installment loans.

This year as last, International Business Machines Corp. has a position in the bank mainframe computer market that approaches monopoly. Of the 178 banks on which information is available, IBM is in 160 and is the sole mainframe in most of those.

Seven banks have no mainframes, but their processing is done by affiliates that are equipped with IBM hardware.

Of the seven banks whose sole mainframe is an IBM competitor, Hitachi Ltd. and Amdahl Corp. account for two each, and National Advanced Systems, NCR Corp., and Unisys Corp. for one each. But even in those cases, Amdahl and NAS computers are IBM compatible.

The NCNB Approach

Aside from the dominance of IBM in mainframes and AFS in commercial loan systems, a striking feature of the 1989 survey is the widespread consolidation of acquired banks into interstate holding company computer networks.

NCNB Corp., Charlotte, N.C., is the most active of these companies. It has four banks with more than $2 billion deposits: the flagship NCNB National Bank of North Carolina, Charlotte, which ranks 24th; NCNB National Bank of Florida, Tampa, 36th; NCNB South Carolina, Columbia, 162nd; and NCNB Texas National Bank, Dallas, which now is bigger than the lead bank and ranks 11th.

The Federal Deposit Insurance Corp. created NCNB Texas on July 30, 1988, to merge no fewer than 40 bank subsidiaries of the insolvent First RepublicBank Corp.

"We're doing a long-range study to determine how we want to move with that," said Harvey Liedle, NCNB's director of application systems, in a phone interview.

"In the Southeast, we have completed all the mergers and all are running on NCNB systems. North and South Carolina are processed out of the Charlotte data center. Tampa processes for Florida and Georgia."

The Charlotte center serves about 425 branches, and the Tampa center more than 200. But each processes certain applications for the other. Commercial loans throughout the Southeast are run on an AFS system in Charlotte. Consumer loans are run on a Kirchman system in Tampa. NCNB is now converting Charlotte to a Computer Associates International general ledger system used in Tampa.

"According to our strategy, we are not converting to a common system just so we can be on a common system," Mr. Liedle said.

"If we happen to be running two systems, we will not replace one until it's broke. If it's not meeting the needs of the bank, then we will think of converting to the other. And if neither one is meeting long-term needs, then we will replace them with something different, based on business needs." □

Major Applications At a Glance

	Demand deposit accounts		Installment loans		Commercial loans	
	Number	Percent	Number	Percent	Number	Percent
Software written by bank	57	36.3%	42	25.5%	22	16.1%
Licensed, not vendor maintained	20	12.7%	24	14.5%	13	9.5%
Maintained by bank, subtotal	77	49%	66	40%	35	25.6%
Licensed, vendor maintained	64	40.8%	83	50.3%	86	62.8%
Total processed in-house	141	89.8%	149	90.3%	121	88.3%
Remote processor	14	8.9%	15	9.1%	14	10.2%
Facilities manager	2	1.3%	2	1.2%	2	1.5%
Total sample	157	100%	165	100%	137	100%
No response, not applicable	27		19		47	
Total survey	184		184		184	

Source: American Banker Technology Survey 1989

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Big Banks' Mainframes and Core Applications Software

U.S. commercial banks with more than $2 billion in deposits on June 30, 1989.

Boldface listing: information from bank. Lightface listing: information from other sources

Footnotes: (1) Remote processor. (2) No longer under maintenance contract. (3) Facilities manager.

Abbreviations: AMS = American Management Systems Inc. AFS = Automated Financial Systems Inc. CA = Computer Associates International Inc. DEC = Digital Equipment Corp. EDS = Electronic Data Systems Corp. MAS = Management Science America Inc. NAS = National Advanced Systems. SA/M&I = M&I Data Services Inc. system marketed by Software Alliance Corp.

Dep Rank 6/89	Bank	Mainframes	Demand deposit account systems	Installment loan systems	Commercial loan systems	Conversions
1	**Citibank, New York**	**IBM, *DEC, Teradata, others***	**In-house, *Hogan, others***	**In-house, *others***	*Shaw*	
2	**Bank of America, San Francisco**	**IBM, Hitachi, Amdahl**	**In-house**	**In-house**	**AFS**	
3	**Chase Manhattan Bank, New York**	**IBM, DEC, Unisys**	**IBM(2)**	**In-house**	**In-house**	
4	**Morgan Guaranty Trust Co., New York**	**IBM**	**In-house**	**AFS(2)**	**AFS(2)**	**Installment and commercial loans to AFS Level III in 2d Qtr. 1990.**
5	**Manufacturers Hanover Trust Co., New York**	**IBM, NCR, DEC**	**Anacomp (2)**	**Anacomp (2)**	*AFS*	
6	**Security Pacific National Bank, Los Angeles**	**IBM, Tandem, DEC**	**In-house**	**Shaw**	**AFS**	**Installment loans from in-house**
7	**Chemical Bank, New York**	**IBM, Amdahl**	**In-house**	**In-house**	**In-house**	
8	**Wells Fargo Bank, San Francisco**	**IBM**	**In-house**	**In-house**	**AFS**	
9	**Bankers Trust Co., New York**	**IBM**	**SA/M&I**	**SA/M&I**	**In-house**	**Installment loans from Kranzley**
10	**First National Bank, Chicago**	**IBM**	**Hogan**	**Hogan**	**In-house**	**Installment loans from Uccel 12/89.** Commercial loans to Hogan 2/91.
11	**NCNB Texas National Bank, Dallas**	**IBM, Amdahl**	**In-house**	**In-house**	**In-house**	
12	**Bank of New York**	**IBM, Amdahl**	**Mach I, Mach II(2)**	**In-house**	**AFS**	
13	**Continental Bank, Chicago**	**IBM**	**SA/M&I**	**Uccel(2)**	**In-house**	
14	**First National Bank, Boston**	**IBM**	**In-house**	**In-house**	**In-house**	DDAs and installment loans to SA/M&I in '90 & '91.
15	**Marine Midland Bank, Buffalo**	**IBM**	**In-house**	**In-house**	**In-house**	
16	**First Interstate Bank of Calif., Los Angeles**	**IBM**	**In-house**	**Shaw**	**In-house**	
17	**Mellon Bank, Pittsburgh**	**IBM**	**In-house**	**In-house**	**In-house**	
18	**Irving Trust Co., New York**	See Bank of New York #12 into which Irving Trust merged on Oct. 10, 1989. Systems have been converted.				
19	**Republic National Bank, New York**	**IBM, DEC**	**Systematics**	**Systematics**	**In-house**	Commercial loans to AFS
20	**National Bank of Detroit**	*IBM*		*AMS*		
21	**National Westminster Bank USA, New York**	**IBM, Tandem**	**In-house**	**In-house**		
22	**Wachovia Bank & Trust Co., Winston-Salem**	**IBM, NCR**	**Hogan**	**In-house**		
23	**Union Bank, San Francisco**	**IBM**	**IBM (2)**	**Computer Associates**	**Computer Associates**	Commercial loans to AFS
24	**NCNB National Bank of N.C., Charlotte**	**IBM**	**Hogan**	**Kirchman**	**AFS**	
25	**Southeast Bank, Miami**	**Hitachi**	**Weiland(2)**	**AMS**	**Fidelity Bank(2)**	
26	**Boston Safe Deposit & Trust Co.**	**IBM**	**Computer Associates**	**Kirchman**	**N.A.**	
27	**Sovran Bank, Richmond**	**IBM**	**SA/M&I**	**AMS**	**In-house**	
28	**Bank One, Texas, Dallas**	**IBM**	**EDS (3)**	**EDS (3)**	**EDS (3)**	
29	**Pittsburgh National Bank**	**IBM**	**Hogan**	**Kranzley (2)**	**Fidelity Bank(2)**	
30	**First Bank, Minneapolis**	**IBM, Unisys**	**In-house**	**In-house**		
31	**First Union National Bank, Charlotte, N.C.**	**IBM, NAS**	**IBM(2)**	**In-house**	**AFS**	Commercial loans to AFS at First Union, Jacksonville. No date.
32	**Citizens & Southern National Bank, Atlanta**	**IBM, Tandem, Prime**	**In-house**	**In-house**		
33	**Bank of New England, Boston**	**IBM**	**In-house**	**In-house**	**AFS**	
34	**Seattle-First National Bank**	*IBM, NAS*	*Hogan*			
35	**Valley National Bank, Phoenix**	**IBM**	**Hogan(2)**	**Shaw**	**AFS**	
36	**NCNB National Bank of Florida, Tampa**	**IBM**	**Kirchman**	**Kirchman**	*AFS*	
37	**Connecticut Bank & Trust Co., Hartford**	**IBM**	**In-house**	**In-house**	**AFS**	
38	**First Fidelity Bank, Newark, N.J.**	**IBM**	**Computer Associates**	**Computer Associates**	*AFS*	

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Big Banks' Mainframes and Core Applications Software Continued

U.S. commercial banks with more than $2 billion in deposits on June 30, 1989.

Boldface listing: information from bank. Lightface listing: information from other sources. Footnotes: (1) Remote processor. (2) No longer under maintenance contract. (3) Facilities manager.

Dep Rank 6/89	Bank	Mainframes	Demand deposit acct systems	Installment loan systems	Commercial loan systems	Conversions
39	**Crestar Bank, Richmond**	**IBM**	**In-house**	*Shaw*	*Shaw*	Upgrade commercial loans from Shaw 2.0 to 3.1 by early 1991.
40	**Michigan National Bank, Farmington Hills**	**IBM**	**Systematics**	**In-house**	**Systematics**	
41	**Connecticut National Bank, Hartford**	**IBM**	**SA/M&I**	**AMS**	**AFS**	DDAs,commercial loans from in-house
42	**Comerica Bank-Detroit**	**IBM**	**Hogan**	**Computer Associates**	**AFS**	
43	**Philadelphia National Bank**	**IBM, Tamdem**	**In-house**	**Kranzley (2)**	**In-house**	
44	**First Union Natl. Bank of Florida, Jacksonville**	**NAS**	**In-house**	**Kranzley (2)**	**In-house**	Commercial loans to AFS in 1990.
45	**Manufacturers National Bank, Detroit**	**IBM**	**In-house**	**In-house**	**In-house**	
46	**Maryland National Bank, Baltimore**	**IBM**	**National City, Cleveland (2)**	**Computer Associates**	*Shaw*	
47	**Harris Trust & Savings Bank, Chicago**	**IBM, Unisys**	**Hogan**	**In-house**	**In-house**	DDA from in-house. Commercial loans to AFS.
48	**United States National Bank, Portland, Ore.**	**IBM**	**SA/M&I**	**Shaw**	**Shaw**	
49	**Fidelity Bank, Malvern, Pa.**	*IBM*	*SA/M&I*	*AMS*	*AFS*	
50	**AmeriTrust Co., Cleveland**	**IBM**	**In-house**	**Computer Associates**	**Computer Assciates**	
51	Huntington National Bank, Columbus, Ohio	IBM, Unisys	In-house		AFS	
52	Texas Commerce Bank, Houston	*IBM*	*Hogan*			
53	Meridian Bank, Reading, Pa.	IBM	In-house	In-house	Shaw	
54	Florida National Bank, Jacksonville	IBM	SA/M&I	Computer Associates	AFS	All to First Union, Jacksonville, in 1990.
55	First Interstate Bank of Arizona, Phoenix	IBM	In-house	Shaw	Computer Associates	
56	Bank of Hawaii, Honolulu	IBM	Wellsco (2)	Shaw	Shaw	DDA to Hogan. Installment loans from Kirchman.
57	Security Pacific Bank Washington, Seattle	IBM	In-house	Shaw		
58	First National Bank, Atlanta					
59	First Interstate Bank of Texas, Houston	*IBM*	SA/M&I	*Shaw*		
60	Fleet National Bank, Providence, R.I.	IBM, DEC, Tandem	Computer Associates	AMS	AFS	
61	**Bank of Tokyo Trust Co., New York**	**IBM**	**IBM(2)**	**Affiliate(2)**		
62	**National City Bank, Cleveland**	*IBM*			*AFS*	
63	**AmSouth Bank, Birmingham, Ala.**	**IBM**	**Computer Associates**	**Computer Associates**		
64	**Provident National Bank, Philadelphia**	**IBM**	**In-house**	**Kranzley(2)**	**Fidelity Bank(2)**	Commercial loans to affiliate
65	**Norwest Bank Minneapolis**	**IBM**	**In-house**	**In-house**	**Computer Associates**	To EDS integrated system in 1991/92
66	**Sanwa Bank California, San Francisco**	**IBM**	**SA/M&I**	**SA/M&I**	**AFS**	
67	**Boatmen's National Bank, St. Louis**	*IBM*		*AMS*		
68	**Citizens & Southern National Bk., Ft. Lauderdale, Fla.**	**IBM**	**Kirchman**	**Shaw**	**Kirchman**	
69	**Signet Bank/Virginia, Richmond**	**IBM,Unisys,Tandem**	**In-house**	**Anacomp(2)**	*AFS*	
70	**Hibernia National Bank, New Orleans**	**IBM**	**Hogan**	**Computer Associates**	**Shaw**	To IBM systems operations contract.
71	Northern Trust Co., Chicago	IBM, DEC	In-house	SA/M&I	AFS	
72	Shawmut Bank, Boston	IBM	In-house	In-house	*AFS*	
73	Barnett Bank of South Florida, Miami	*IBM*	*Affiliate(1)*		*Affiliate(1)*	

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Big Banks' Mainframes and Core Applications Software Continued

U.S. commercial banks with more than $2 billion in deposits on June 30, 1989.

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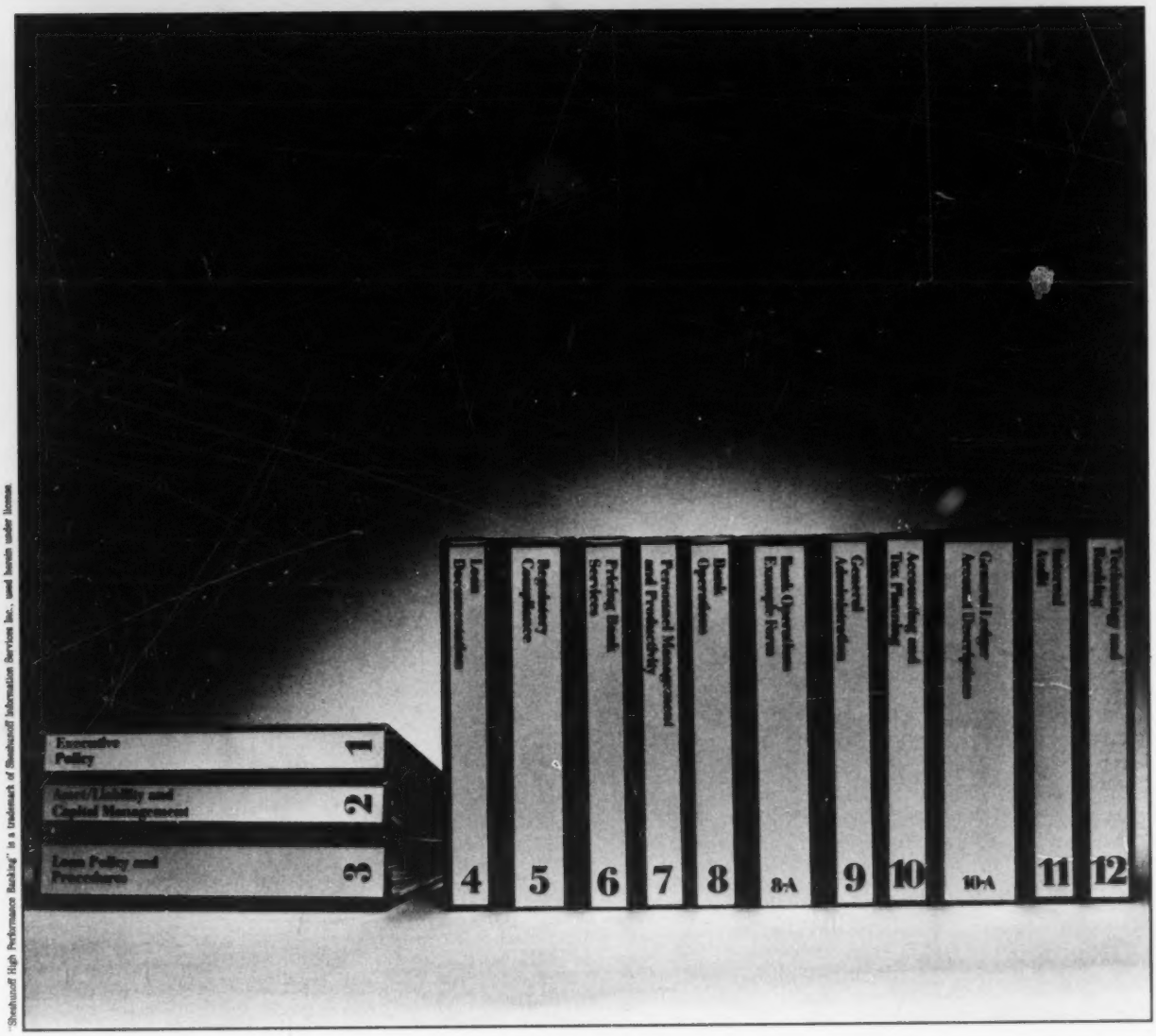
Dep Rank 6/89	Bank	Mainframes	Demand deposit acct systems	Installment loan systems	Commercial loan systems	Conversions
74	**Riggs National Bank, Washington, D.C.**	**IBM**	**SA/M&I**	**In-house**	**Uccel (2)**	
75	**First Interstate Bank of Oregon, Portland**	**IBM**	**In-house**	**Shaw**	*AFS*	
76	**Society National Bank, Cleveland**	**IBM**	**Hogan**	**Hogan**	**Kirchman**	Commercial loans to AFS 12/89
77	**Banco Popular de Puerto Rico, San Juan**	**IBM**	**In-house**	**In-house**	**In-house**	Installment loans to Shaw by 6/90. Commercial loans to vendor not chosen.
78	**State Street Bank & Trust Co., Boston**	*IBM*	*Hogan*			
79	**First Pennsylvania Bank, Philadelphia**	**IBM**	**In-house**	**Kranzley(2)**	**In-house**	
80	**First Tennessee Bank, Memphis**	**IBM**	**Hogan**	**Kirchman**	**Computer Associates**	To IBM systems operations contract Commercial loans to BancA.
81	**First C. , Texas-Houston**	**IBM**	**EDS (3)**	**EDS (3)**	**EDS (3)**	**Commercial loans to SA/M&I 3/91**
82	**European American Bank, New York**	**IBM**	**Computer Associates**	**Kirchman**	*AFS*	
83	**Bank of California, San Francisco**	**IBM, Unisys**	**Kirchman**	**Uccel (2)**	*AFS*	
84	**First National Bank of Maryland, Baltimore**	*IBM*		*AMS*	*AFS*	
85	**Midlantic National Bank, Newark, N.J.**	*IBM*	**SA/M&I**	**Kirchman**	**Shaw**	
86	**Fifth Third Bank, Cincinnati**	**IBM**	**Fidelity Bank(2)**	**Computer Associates**		
87	**National Westminster Bank, Jersey City, N.J.**	**IBM**	**Kirchman**	**Kirchman**	**Kirchman**	**All systems to parent National Westminster USA, New York**
88	**South Carolina National Bank, Columbia**	**IBM**	**SA/M&I**	**AMS**	**Shaw**	**Evaluating conversion of installment loans to Shaw. Possible 3d Qtr. 1990.**
89	**First Alabama Bank, Montgomery**	**IBM**	**Natl.City, Cleveland(1)**	**Kranzley(2)**	**Shaw**	
90	**First Florida Bank, Tampa**	**IBM**	**SA/M&I**	**Shaw**	**SA/M&I**	
91	**Israel Discount Bank, New York**	**IBM**	**In-house**	**Kirchman**	**AFS**	
92	**American Security Bank, Washington, D.C.**	**IBM**	**Affiliate(2)**	**Affiliate(1)**	**Affiliate(1)**	
93	**Chase Lincoln First Bank, Rochester, N.Y.**	**IBM**	**In-house**	**In-house**		
94	**BancOhio National Bank, Columbus**	**IBM**	**In-house**	**Kranzley(2)**	*AFS*	
95	**Central Fidelity Bank, Richmond**	**IBM**	**SA/M&I**	**Shaw**	**Kirchman(2)**	Commercial loans to SA/M&I 1st Qtr. 1990, installment loans in 2 years.
96	**First Hawaiian Bank, Honolulu**	**Unisys, IBM**	**In-house**	**In-house**	**AFS**	
97	**Chemical Bank New Jersey, Morristown**	*IBM*			*Shaw*	
98	**U.S. Bank of Washington, Seattle**	**None**	**Affiliate(1)**	**Affiliate(1)**	**Affiliate(1)**	
99	**Premier Bank, Baton Rouge, La.**	**IBM**	**SA/M&I**	**SA/M&I**	**SA/M&I**	
100	**Greenwood Trust Co., New Castle, Del.**	**IBM,NCR**	**Hogan for money market accounts(2),NCR for branch**	**Hogan money market accounts(2),NCR branch**	**None**	
101	**Norstar Bank of Upstate NY, Albany**	*IBM*		*AMS*	*AFS*	
102	**Citibank (New York State), Perinton**	*IBM*		*AMS*		
103	**Branch Banking & Trust Co., Wilson, N.C.**	**IBM**	**Computer Associates**	**Shaw**	**Kirchman**	
104	**City National Bank, Beverly Hills, Calif.**	**IBM**	**In-house**			
105	**Security Pacific Bank Arizona, Phoenix**	**None**	**Affiliate(1)**	**Affiliate(1)**	**Affiliate(1)**	
106	**Trust Company Bank, Atlanta**	**IBM**	**Uccel(2)**	**In-house**		
107	**United Jersey Bank, Hackensack, N.J.**	*IBM*		*Shaw*	*AFS*	
108	**INB National Bank, Indianapolis**	**Amdahl**	**In-house**	**In-house**	**In-house**	
109	**Equitable Bank, Baltimore**	**IBM**	**SA/M&I**	**In-house**	**SA/M&I**	
110	**Sumitomo Bank of California, San Francisco**	**NCR**	**Anacomp(2)**	**NCR(2)**	**NCR(2)**	



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Big Banks' Mainframes and Core Applications Software Continued

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Footnotes: (1) Remote processor. (2) No longer under maintenance contract. (3) Facilities manager.

Dep Rank 6/89	Bank	Mainframes	Demand deposit acct systems	Installment loan systems	Commercial loan systems	Conversions
111	**BayBank Middlesex, Burlington, Mass.**	*IBM,Tandem*				
112	**Continental Bank, Norristown, Pa.**	**None**	**MidLantic(1)**	**MidLantic(1)**	**MidLantic(1)**	
113	**Sovran Bank/Maryland, Bethesda**	*IBM*	*SA/M&I*	*AMS*		
114	**First Union National Bank, Atlanta**	**None**	**Affiliate(1)**	**Affiliate(1)**	**Affiliate(1)**	All from FFMC in 9/89.
115	**National Community Bank, Rutherford, N.J.**	**IBM**	**Systematics**	**Systematics**		
116	**American National Bank & Trust Co., Chicago**	**IBM**	**In-house**	**Computer Associates**	**AFS**	
117	**Norstar Bank, Buffalo**	*IBM*	*Affiliate(1)*	*AMS*	*AFS*	
118	**Sun Bank, Orlando, Fla.**	**IBM, Tandem**	**In-house**	**In-house**	**In-house**	Commercial loans to AFS
119	**Bank One Columbus, Ohio**	**IBM**	**Computer Associates**	**AMS**	*AFS*	
120	**Chase Manhattan Bank (USA), Wilmington**					
121	**Mellon Bank (East), Philadelphia**	**IBM**	**In-house**	**In-house**	**Affiliate(1)**	
122	**Industrial Bank of Japan New York**	**Hitachi**	**In-house**	**none**	**In-house**	
123	**First-Citizens Bank & Trust Co., Raleigh, N.C.**	**IBM**	**In-house**	**In-house**		
124	**First American Bank of Virginia, McLean**	**IBM**	**Computer Associates**	**Computer Associates**	*AFS*	
125	**Midlantic National Bank/North, West Paterson, N.J.**	**None**	**Midlantic, West Orange(1)**	**Midlantic, West Orange(1)**		
126	**Dominion Bank, Roanoke, Va.**	**IBM, Amdahl**	**Hogan**	**Kranzley(2)**	**Shaw(2)**	**Installment and commercial loans to AFS**
127	**Mercantile Bank, St. Louis**	**IBM**	**In-house**	**Computer Associates**	*AFS*	
128	**Manufacturers & Traders Trust Co., Buffalo**	**IBM, Amdahl**	**Affiliate(1)**	**Affiliate(1)**		
129	**Bank Leumi Trust Co., New York**	*IBM*			*AFS*	
130	**Bank One Indianapolis**	**IBM**	**In-house**	**AMS**	**AFS**	
131	**Citizens & Southern National Bank, Charleston, S.C.**	**IBM**	**In-house**	**Kranzley(2)**	*AFS*	
132	**Bank South, Atlanta**	**IBM**	**In-house**	**Shaw**	*Shaw*	DDA system to Hogan 2/90. All to IBM systems operation contract.
133	**First Interstate Bank of Washington, Seattle**	**IBM**	**Hogan**	*Shaw*	*AFS*	
134	**Sovran Bank/Central South, Nashville**	**IBM**	**Computer Associates**	**AMS**		DDAs from Weiland
135	**First National Bank, Louisville, Ky.**	**IBM**	**In-house**	**Shaw**	**Centurex (2)**	3 applications to parent 9/90.
136	**Citizens Fidelity Bank & Trust Co., Louisville**	**IBM**	**In-house**	**Kranzley(2)**	**In-house**	DDA to Hogan 1992
137	**Deposit Guaranty Natl.Bank, Jackson, Miss.**	**IBM**	**SA/M&I**	**Kirchman**	**Systems Associates (2)**	
138	**Trustcorp Bank Ohio, Toledo**	**IBM**	**Financial Software of America(2)**	**Kirchman**	**Kranzley(2)**	
139	**Central Bank of the South, Birmingham, Ala.**	**IBM**	**Shared Financial**	**Systems(2)**	**Uccel(2)**	
140	**Bank of Baltimore**	**IBM, Unisys**	**In-house**	**In-house**	**Kirchman**	
141	**Banco de Ponce, Puerto Rico**	**IBM**	**Computer Associates**	**In-house**		
142	**First Interstate Bank of Nevada, Reno**	**IBM**	**In-house**	**Shaw**	**AFS**	
143	**United States Trust Co., New York**	**IBM, DEC**	**M&I Data Services (1)**	**M&I Data Services (1)**	**M&I Data(1)**	
144	**Union Trust Co., Stamford, Conn.**	**IBM, Tandem**	**Computer Associate**	**AMS**		
145	**Barclays Bank of New York**	**IBM**	**Hogan**	**AMS**		
146	**Citibank (South Dakota), Sioux Falls**					
147	**Old Kent Bank & Trust Co., Grand Rapids, Mich.**	**IBM**	**SA/M&I**	**AMS**	**AFS**	
148	**Fuji Bank & Trust Co., New York**					
149	**Trustmark National Bank, Jackson, Miss.**	**IBM**	**Kirchman**	**Kirchman**	**Kirchman**	
150	**Signet Bank/Maryland, Baltimore**	*IBM*		*AMS*	*AFS*	

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Big Banks' Mainframes and Core Applications Software Continued

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151	**Citizens First National Bank, Ridgewood, N.J.**	**IBM**	**Kirchman**	**Kirchman**	**Kirchman**	
152	**American Express Centurion Bank, Newark, Del.**	**IBM**	**N.A.**	**Affiliate(1)**	**N.A.**	Loans from NCR.
153	**First Wisconsin National Bank, Milwaukee**	**IBM**	**In-house**	**In-house**	*Shaw*	
154	**Equibank, Pittsburgh**	*IBM*		*Shaw*	*Shaw*	
155	**First Security Bank of Utah, Ogden**	**IBM**	**In-house**	**Uccel**	**Fidelity Bank(2)**	DDA to Hogan 1st Qtr. 1990.
156	**Central Trust Co., Cincinnati**	**IBM,NAS**	**IBM(2)**	**MSA(2)**		
157	**Wilmington Trust Co., Delaware**	**IBM**	**In-house**	**In-house**	**IBM(2)**	Commercial loan system under review.
158	**Star Bank, Cincinnati**	**IBM**	**Hogan**	**Kirchman**	**Kirchman**	
159	**Bank of Boston Connecticut, Waterbury**	**Unisys**	**In-house**	**In-house**		
160	**First of America Bank-S.E.Michigan, Detroit**			*AMS*		
161	**Rhode Island Hospital Trust NB, Providence**	**IBM**	**SA/M&I**	**Kranzley(2)**		
162	**NCNB South Carolina, Columbia**	**None**	**Affiliate(1)**	**Affiliate(1)**	**Affiliate(1)**	
163	**Puget Sound Bank, Tacoma, Wash.**	**IBM**	**Weiland**	**In-house/M&I**	**SA/M&I**	DDA to SA/M&I May 1990. Installment loans to SA/M&I 3d quarter 1990. Installing SA/M&I deposits.
164	**West One Bank Idaho, Boise**	**IBM**	**Kirchman**	**Shaw**		
165	**SouthTrust Bank of Alabama, Birmingham**	**Amdahl**	**Kirchman (2)**	**In-house**	**Kirchman**	
166	**Hamilton Bank, Lancaster, Pa.**	**None**	**Phila.Natl.(1)**	**Phila.Natl.(1)**	**Phila.Natl.(1)**	
167	**Imperial Bank, Los Angeles**	*IBM*	*Systematics*	*Systematics*	*Systematics*	
168	**Exchange National Bank, Chicago**	**IBM**	**Weiland**	**Computer Associates**	**Computer Associates**	
169	**Norstar Bank, Hempstead, N.Y.**	*IBM*			*AFS*	
170	**Citytrust, Bridgeport, Conn.**	**IBM,DEC,Unisys**	**Hogan**	**Hogan**		
171	**Northeastern Bank of Pa., Wilkes-Barre**	**Affliate(1)**	**Affiliate(1)**	**None**	**Affiliate**	
172	**First American National Bank, Nashville**	*IBM*			*AFS*	
173	**Boatmen's First Natl.Bank, Kansas City, Mo.**	**IBM**	**Kirchman(2)**	**Kranzley(2)**	*Shaw*	
174	**Third National Bank, Nashville**	**IBM**	**In-house**	**Kranzley(2)**	*AFS*	All 3 systems to mainframes at Trust Company Bank, Atlanta
175	**Frost National Bank, San Antonio**	*IBM*		*Shaw*		
176	**Valley Bank of Nevada, Las Vegas**					
177	**Merchants National B&T Co., Indianapolis**	**Affiliate (IBM)(1)**	**Affiliate(Hogan)(1)**	**Affiliate(In-house)(1)**	**Affiliate (AFS)(1)**	
178	**Key Bank, Albany, N.Y.**			*AMS*		
179	**First Natl.Bank of Commerce, New Orleans**	**IBM**	**Kirchman**	**Kirchman**	**Shaw**	Installment loans to Shaw.
180	**Whitney National Bank, New Orleans**	**IBM**	**Kirchman**	**Kirchman**		
181	**First Fidelity Bank/North Jersey, Totowa, N.J.**	*IBM*		*AMS*	*AFS*	
182	**Citibank (Arizona), Phoenix**	*IBM*	*Systematics*	*Systematics*	*Systematics*	
183	**New Jersey National Bank, Pennington**	**None**	**Phila.Natl(1)**	**Phila.Natl(1)**	**Phila.Natl(1)**	
184	**Key Bank of Central New York, Syracuse**	**IBM**	**Affiliate (1)**	**Affiliate (1)**	**Affiliate (1)**	

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American Banker's Technology Survey: The Questionnaire

Following are the questions that were posed to senior executives responsible for operations and/or technology at 381 commercial banks. The survey was administered in June and July by Trans Data Corp., Wayne, Pa., a research affiliate of the *American Banker*.

Operations Department/ Architecture

1. Do you belong to a holding company?

A. Is the budget or management of any operations, data processing, or technology function influenced by the holding company or affiliate institution?

B. Does this influence extend to:

Setting technical standards (operating systems); having a list of approved vendors; reviewing and approving holding company members' recommendations; making recommendations for holding company members; review and approval; joint development and evaluation; combined purchasing; any other areas? (specify)

C. Using a scale from 1 to 5, with 1 being no control and 5 being total control, rate the extent to which operating and spending decisions are controlled by the holding company.

2. From the following list of functions or areas that are considered part of the definition of operations, data processing, and technology, do you use the function? Who controls and manages the function? For example, are your data processing and host computer functions:

Managed by central operations and DP area; managed by another business unit; managed by a subsidiary servicecompany; managed by a correspondent; managed by a service bureau; managed by the holding company; managed by an affiliate; combination; function not used at all by the institution; don't know/refuse.

Data processing and host computers; office automation, like word processors, fax machines; programming and systems development; voice or telephone communications; data communications; corporate cash management services such as lockbox; branch automation; ATMs and self-service terminals; other retail EFT services such as telephone bill payment, POS, or home banking; mortgage and loan processing; check or item processing; credit card processing; accounting and bookkeeping; other (specify).

Departmental computers; PC management; computer maintenance; applications development; information systems/IS/MIS; executive information/decision-support systems; network management; wire transfer/ACH; cash vault/merchant services; information reporting; account processing/management; customer information file; commercial loan processing; consumer loan processing; proof operations; remittance/item processing; payments; merchant advice; collection; trust operations; international services; audit; compliance; cashier; administration; branch administration; office operations; security for the bank; mail processing; document publishing (fulfillment); other (Specify).

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Personnel

3. Approximately how many career professionals, excluding clerical staff and proof operators, measured in full-time equivalents, work within your operations division? Career professionals mean salaried employees or whatever definition your institution uses. (Please include functions that were described earlier.)

A. Approximately how many employees, in full-time equivalents, does your bank employ altogether? (Two part-time = one full-time)

B. What is the current annual turnover rate among career professionals in the operations and technology areas of your institution?

Financial Structure And Spending

4. What is your total annual budget for operations, data processing and information systems at your bank, as defined by the functional areas discussed above, including any functions that are performed by an outside party?

A. What percentage is spent in the following areas?

Personnel, salaries, benefits; facilities/supplies; equipment/software maintenance; operational or DP functions performed by an external agent.

B. Your capital budget for acquisition of new equipment, software and systems for 1989? How much was spent in 1988?

5. Do the computer and data processing functions of your institutions charge back services to other business units or end-user departments?

6. What is your institution's strategic objective when investing in new technology?

Cutting costs; cutting staff; increasing quality of customer service; increasing revenues; increasing marketing capabilities; ability to design new products quickly; improving image of institution image.

A. Given this orientation, in which of the following areas will your investments concentrate over the next five years? For example, in mainframe hardware, minicomputers/department computers, or PCs?

In applications such as data communications, data networks (LANs, WANs), voice-communication services (voice response, PBX), applications software (customer information files), or personnel/training?

Or in areas such as item-processing equipment, ATMs/self-service terminals, or electronic funds transfer technology?

Research and Development

7. Do you have a research and development or applied technology research activity in your institution?

A. Is this a line item in your operations budget?

B. Which of the following types of projects come under your R&D function?

Dear Reader, How Are We Doing?

The *American Banker* hopes you find value in our third annual Technology survey and that the information will be useful in your work.

To help us prepare future technology surveys, would you please offer us some feedback on this one? **Everyone who returns this coupon will be sent a free copy of the 1989 Technology survey.**

Please return this questionnaire to Fred R. Bleakly, Editor-in-Chief, *American Banker*, One State Street Plaza, New York, NY 10004.

1. Overall, how informative is the 1989 Technology survey?

☐ Very informative ☐ Not very informative
☐ Somewhat informative ☐ Not at all informative

2. How useful is this survey for you?

☐ Very useful ☐ Not very useful
☐ Somewhat useful ☐ Not at all useful

3. How will you use the information from this survey at work?

_____

_____

4. What do you like most about this survey?

_____

_____

5. What do you like least about this survey?

_____

_____

6. How would you improve the presentation of the survey findings?

_____

_____

7. To help us decide which areas to study in future surveys, please rank your interest in each of this year's topics as follows: 3 = Extremely important, 2 = Fairly important, 1 = Not important.

___ What banks spend on technology
___ Effects of consolidation
___ Salary data
___ Personnel issues
___ Investment priorities
___ Disaster recovery and compliance
___ Technological advancements
___ Listing of hardware and software suppliers
___ Vendor ratings

8. What subjects or issues that are not in the 1989 Technology survey would you like covered in a future survey? What other changes would make the survey more useful?

_____

_____

To help us understand your responses better, please fill in the following information:

Name (optional) _____

Title _____

Company _____

Address _____

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P.S. Thanks again very much for your help. If you would be willing to discuss your views of the survey with us, list your **phone number** ( ) _____

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Applications software development; expert systems development/artificial intelligence; Case development; basic technology development; applied technology development (CATs, Voice Response); upgrading equipment and systems; enhancement of customer information file (linking applications for CIF).

Mergers and Acquisitions

8. Has your institution been involved in a merger or acquisition over the past two years?

A. Have any of the operations of the involved institutions been merged or do you plan to merge any during the next year?

B. Which of the following operations have been merged and which do you plan to merge?

Data processing and host computers; office automation, such as word processors; programming and systems development; voice or telephone communications; data communications; corporate cash management services such as lockbox; branch automation; ATMs and self-service terminals; other retail EFT services such as telephone bill payment, POS or home banking; mortgage processing; commercial loan processing; consumer loan processing; check or item processing; credit card processing; trust operations; accounting and bookkeeping.

C. How long did it take to merge these operations?

D. Rank the top three in order of priority.

E. Which of the following took place (or is planned) as a result of your merger?

Disposal of excess equipment; closing/selling redundant branches; consolidating facilities or moving to another location; merge operations centers; merge data bases; consolidate or replace hardware; consolidate branch terminal systems; standardize/integrate software; cut staff.

F. Which of the following equipment did you dispose of as a result of the merger?

Terminals; proof encoders; reader-/sorter equipment; departmental computers; PCs; mainframes.

G. In which of the following ways did you dispose of this equipment?

Sold to used equipment vendor; traded in for new equipment; sold to another institution; took off accounting books but still have; returned to service bureau.

H. How much do you estimate you have saved so far as a result of merging these operations, as a percentage of the combined operating budgets?

I. Have the institutions involved in the merger unified the two companies under the same name?

Disaster Recovery

9. Does your institution have a back-up plan should some type of disaster shut down your computer facilities for an extended period of time?

A. On which of the following methods is your disaster recovery plan based?

Agreement with affiliate or holding company; hot-site backup maintained by your institution; hot-site services leased from an outside agent; redundant facilities with off-site data storage; shell building with vendor agreement for "instant" hardware; reciprocal agreements with other institutions; use service bureau; have no internal computer operations.

B. Which of the following types of testing have you done?

Document review – walk through; simulation; operational – full test; any others? (specify).

C. Using a scale from 1 to 5, with 1 being not at all aware or concerned, and 5 being highly aware and concerned, please rate the awareness and concern of your institution's senior management team with regards to planning for disasters to operations.

D. Have you had a disaster that disrupted your main computer operations within the last two years?

E. Did this disaster cause your disaster recovery program to be activated?

Check Truncation & The Expedited Funds Availability Act

10. Has Regulation CC – the Expedited Funds Availability Act – affected your division, either in expense or operations?

A. Approximately what percentage change in operating expense have you experienced?

B. Which of the following changes have you made?

Purchased new equipment; changed couriers; added courier runs; modified internal procedures; retrained staff; added staff (proof operators).

C. What equipment have you purchased as a result of Reg CC?

Proof encoders; reader sorters; reject and repair devices; computer upgrades; other (specify).

D. For checks drawn on others which are deposited in your institution, do you practice or plan to begin check truncation, whereby paper checks are held at some point in the payment process and the check and payment information is forwarded electronically?

E. When do you plan to begin check truncation?

Voice Response

11. Do you provide or plan to provide your customers with a telephone banking service?

A. What percentage of your retail customers use this telephone banking service?

B. Do you use or plan to use integrated telephone voice response units (VRUs) to provide customers with telephone banking services or for any other purpose?

C. For which of the following applications do you currently use or plan to use VRUs?

Balance reporting; collections; customer service; telephone bill payment; telemarketing; internal use.

Conferences

12. How many conferences on bank operations have you attended in the last year?

A. Using a scale from 1 to 5, with 1 being very ineffective and 5 being very effective, how would you rate their effectiveness in helping you manage Operations?

B. Has your institution been forced to cut back on attending conferences because of budget constraints?

C. Did you attend any of these events the last time they were held? Within the past five years?

NOAC; BAI Retail Delivery; BAI Check Processing.

Technology Trends

13. Using a five-point scale – with 1 being extremely unlikely and 5 being extremely likely – to rate the likelihood that the following new products, services, or procedures will be in widespread use in the banking industry within the next five years.

Smart cards; video banking in the home; loan approvals by expert systems; Computer-aided systems engineering, a productivity tool that helps programmers write software more effectively; electronic data interchange; check safekeeping; image technology for check processing. □

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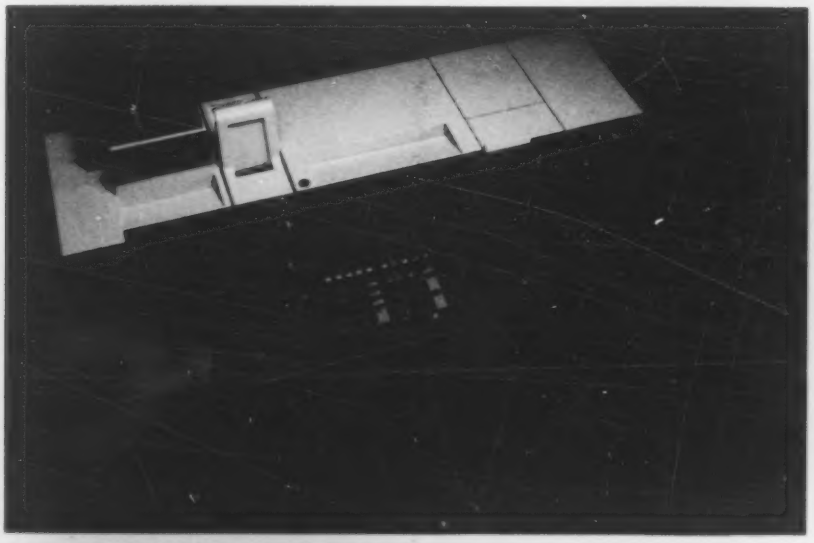

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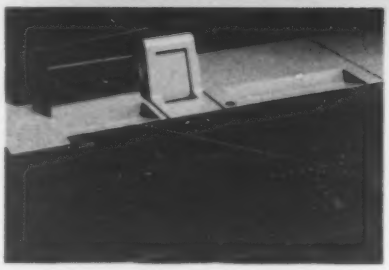

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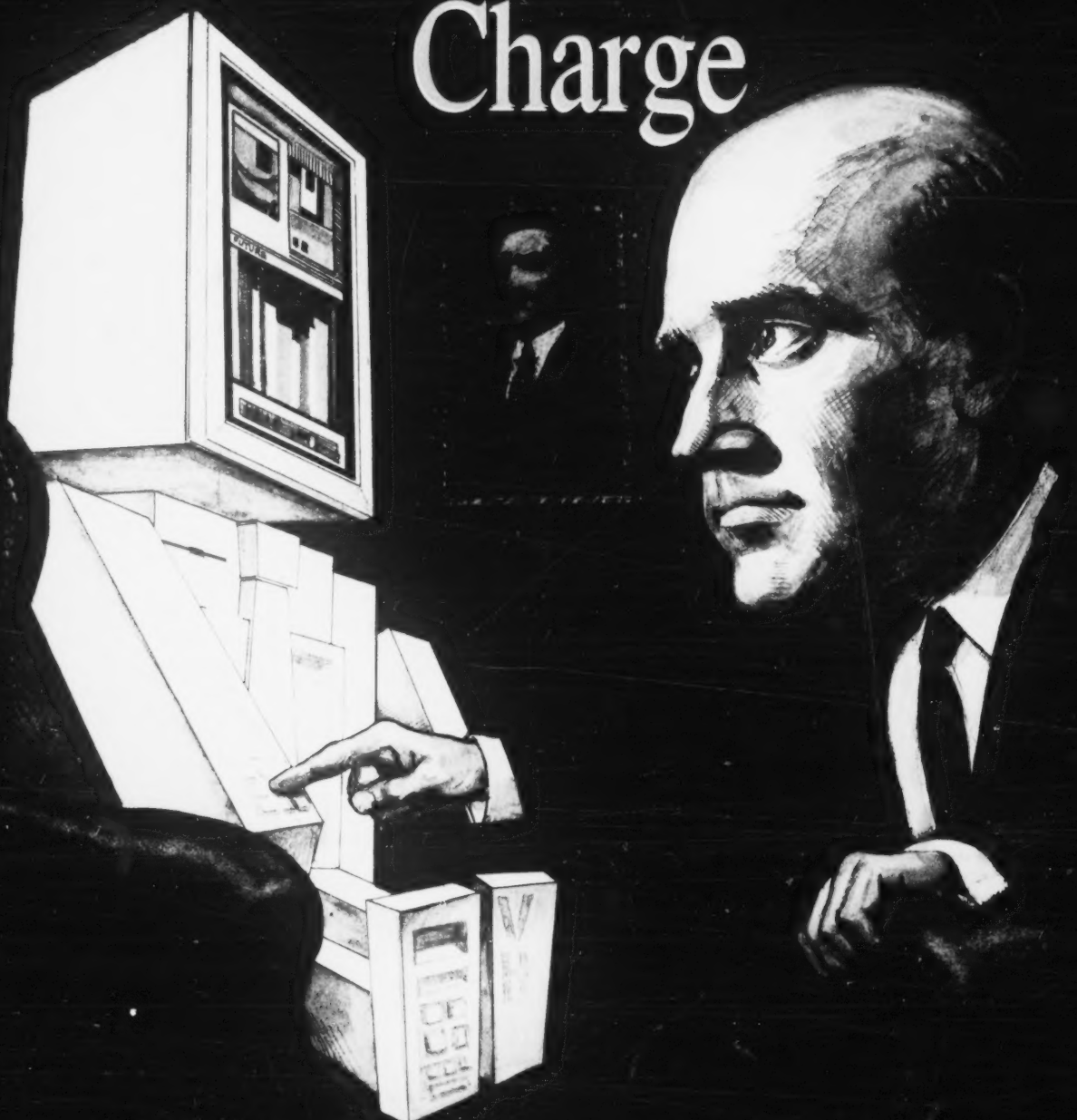
Managing Technology:

CEOs Take Charge



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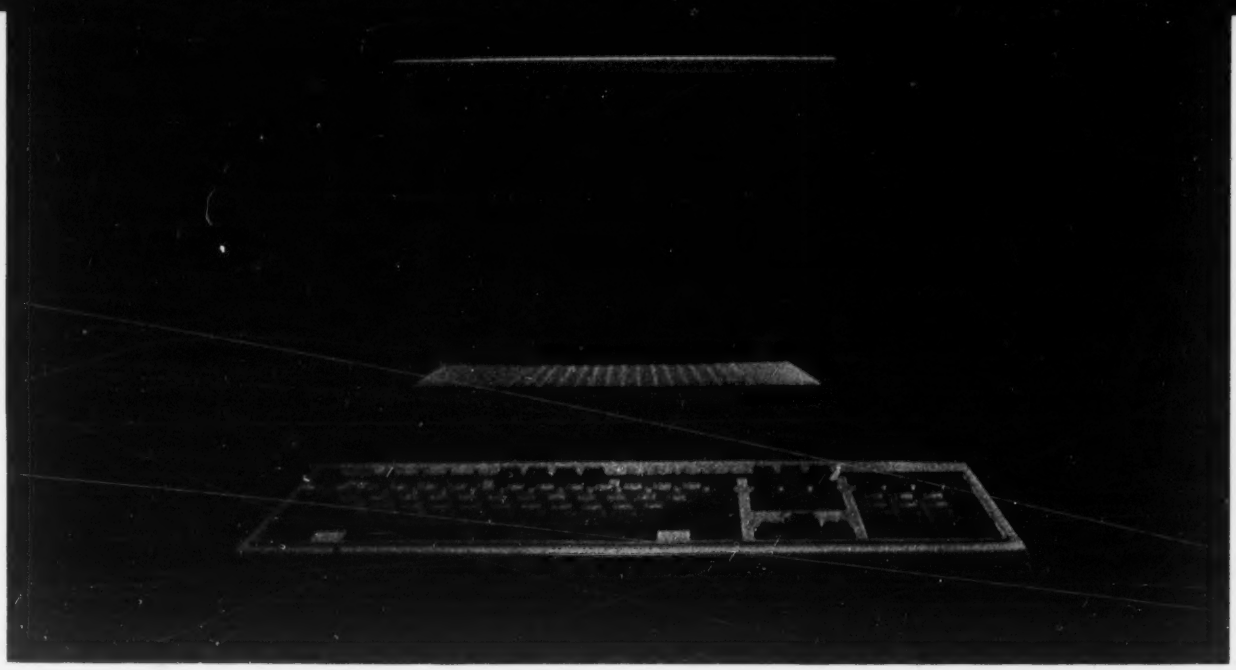

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Dear Reader,

Welcome to the fourth edition of American Banker's annual technology survey. As you will see in the following pages, we have focused the survey this year on the changing role of technology in bank strategy and the chief executive's increased role in the process.

This year and last, the survey showed that the industry is devoting staggering sums to information technology and the people needed to operate systems and manage them. The aggregate is approaching $25 billion, and it continues to rise.

The range of articles this year is wider than ever before. The subjects include the increasing prevalence of technology decisions in the executive suite, the importance of technology in making bank mergers work, and the sectors where banks are targeting the most technology-oriented dollars.

Also new this year are a question-and-answer article in which a management consultant discusses the ways banks are conducting research and development on technology, and a roundup of how some banks' chief executive officers view technology.

The survey is based on interviews that Trans Data Corp. of Wayne, Pa., an American Banker affiliate, conducted with the heads of technology at more than 300 banks. That work provided the raw material for American Banker reporters and freelance writers to probe further; their articles are supplemented with their own interviews.

The architect of the survey was Jeffrey Kutler, the newspaper's assistant managing editor. Patricia Stundza coordinated the editing and writing, along with Suzanne Christy and Joseph McCarthy. Art director Pamela Budz designed the cover, and Dylan Kreuzer and Carl Zeichner the charts.

The annual technology survey is another of the services that the daily American Banker newspaper provides its readers. Since so much is riding on the efficiencies and breakthroughs that technology offers, we hope the stories you are about to read prove helpful.

Sincerely,

Fred R. Bleakley

Fred R. Bleakley
Editor

TECHNOLOGY SHOULDN'T HAVE THIS EFFECT ON YOUR CAPITAL INVESTMENT

Ideally, investments in technology should allow you to quickly take advantage of new developments in the marketplace. Instead, it often strains your financial resources, prohibiting rather than promoting financial opportunities. The optimum solution would be to reap every benefit of the latest technology while redeploying your capital in your core business.

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How the Survey Was Conducted

The articles in this publication report and analyze the results of the *American Banker*'s fourth annual survey on technology management. The survey consisted of interviews with senior executives responsible for operations or technology at 333 commercial banks. These were chosen as a representative sample of the 3,364 banks in the United States with $75 million or more in deposits.

Of the 333 respondents, 171 represented banks with more than $250 million in deposits; 34 of those made up the survey's large-bank segment, each with at least $2 billion in deposits. Another 162 came from banks with $75 million to $250 million in deposits.

The survey was developed by Trans Data Corp., Wayne, Pa., a research affiliate of the *American Banker*, in collaboration with the newspaper's editors and technology staff writers. Trans Data conducted the interviews, tabulated the responses, and assisted in the analyses.

The interviews were conducted by telephone during March and April 1990. The questionnaire – covering management and organizational issues, postmerger strategies, budget priorities, future technologies, and other topics – typically required 20 to 30 minutes to complete.

The statistical reliability of the results varies according to the number of responses to a particular question. For a question in which half of all 333 survey participants give the same response, there is a 95% probability that the same answer would be given by 45% to 55% of all banks of similar size.

In other words, the sampling error at the 95% confidence level is plus or minus five percentage points. Subgroups that consist of smaller sample sizes have greater margins of error.

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Management

Top brass at banking companies, recognizing the strategic importance of technology, are now more deeply involved in automation issues and more open to the idea of information pros ascending the ladder to the CEO's suite.

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CEOs Boarding Hi-Tech Bandwagon With Eye Toward Future

By Jeffrey Kutler

THE AMERICAN BANKER TECHNOLOGY SURVEY SHOWS EXECUTIVES ARE MORE 'HANDS ON' THAN THEY USED TO BE

Shedding some of banking's past conservatism and mistrust of computers, chief executive officers are getting in on the technology act. They are doing so with great enthusiasm and, perhaps paradoxically, gaining the loyalty and respect of underlings from very different career backgrounds.

The CEOs' increasingly hands-on role and technology managers' positive response are starkly evident in the 1990 *American Banker* technology survey.

At three out of four institutions, the top operations or technology officer reports directly to the president or chief executive. At another 7%, the president or CEO takes direct responsibility for back-office functions.

Meanwhile, most technology managers said they receive substantial support from CEOs. On a scale of 1 to 5, with 5 denoting total support, the CEOs at the banks in the survey rated a solid 4.

The data come from a poll of the senior technology managers at 333 banks with at least $75 million in deposits. Trans Data Corp., an *American Banker* research affiliate in Wayne, Pa., conducted the survey by telephone in March and April.

While many technology executives still feel removed from the banking mainstream – more than half say it is unlikely that someone of their background will become a bank president or CEO – their close contacts with top managers have brought them credibility and respect that they lacked a decade ago.

Mutual Admiration

"To say I am hands on in technology may be a little unfair, but I'm talking to those people a lot," said Samuel McCullough, chairman and chief executive officer of Meridian Bancorp, Reading, Pa. "Aside from credit quality, the area where I have to be most concerned about things going wrong is data processing.

"We are committed to devote the talent and resources necessary to this increasingly important part of our business," he added. "I feel very comfortable with the way data processing is run."

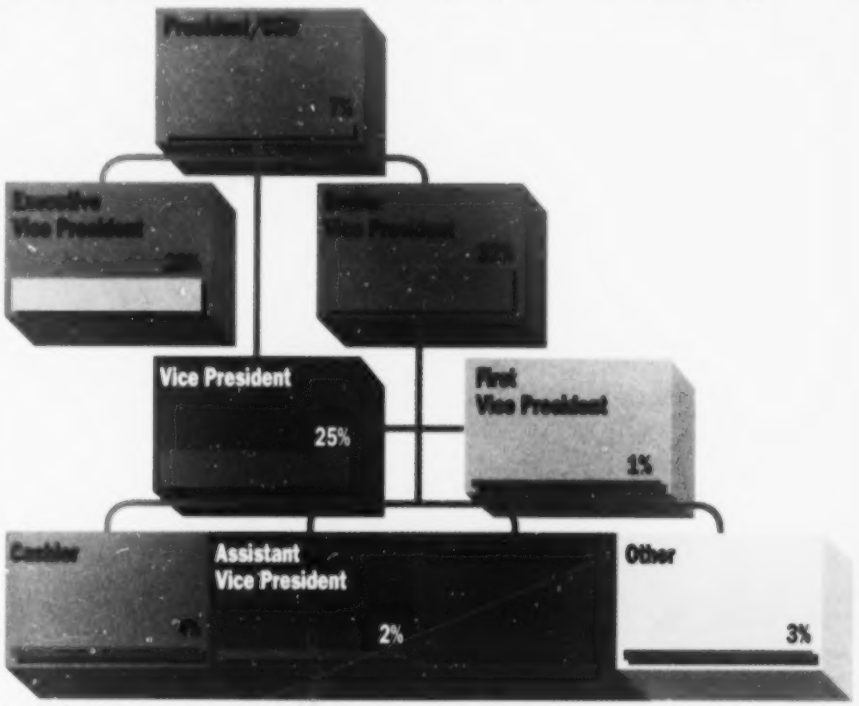
The feeling seems mutual: Most technology officers give their CEOs credit for making a reasonable, if not strong, commitment to automation and innovation. Six out of 10 in the survey described their CEO's attitude as "costs are monitored but opportunity exists for major return on investment." Few complained about technology falling victim to obsessive cost cutting, as some bank automation enthusiasts have feared.

"The use of automation in the delivery of products and services is well understood among our senior management – in some cases the technology *is* the product or service," said Robert Dressel, executive vice president of United Banks of Colorado, Denver. Typical of many technology chiefs in this era of apparent good feeling, Mr. Dressel says he has no complaints about the attention and support, or lack thereof, that his area receives from the chief executive.

"At our bank," he said, "I think those old conflicts vanished 20 years ago, when the CEO at the time launched an effort to create a new data processing system and got everyone behind it. Other banks may not have been so fortunate, but today technology is certainly less controversial than it was several years ago."

Who's in Charge?

Titles of senior-most officers responsible for operations and technology



Base: 333 banks with at least $75 million in deposits
Executive vice president category includes senior vice president, 1%

Source: American Banker Technology Survey 1990

Need for Big Decisions

The need to make major data processing choices is a common thread drawing CEOs into technology decision-making.

"For us it happened in 1983 and 1984, when we had to decide whether to continue running our data center in-house or moving to a service bureau," said Willard Bunn 3d, chairman and chief executive of Marine Corp. and Marine Bank of Springfield, Ill. "Staying in-house required an extensive systems upgrade, but we decided it was in our best interests to do it. To us it was important to control the computer resource."

Mr. Bunn says that resource allowed Marine to forge a reputation for automation far exceeding its $1 billion-asset size. Marine Bank is second only to Chase Manhattan, the second-largest money-center bank, in processing of automated clearing house transactions.

At Chase Manhattan Corp., "the top officers are totally there now," Michael Urkowitz said of their commitment to technology. He is president of Chase Infoserv International, the company's wholesale services unit.

In a sign that times have changed, he said, Chase chairman Willard C. Butcher devoted a recent senior management meeting "specifically to our technology and how it stacked up against the competition."

With a few conspicuous exceptions such as Citicorp, where automation expert John S. Reed rose to chairman in 1984, the topic would have gotten short shrift in banking as recently as five years ago.

"The technology has become so critical to the business of banking, so strategic, that many of the decisions that have to be made must come from the top," said David Van L. Taylor, a group executive at the Bank Administration Institute who has extensively studied technology's rise through the management ranks.

"I do wonder about the effect of spending concerns on necessary, long-term development projects," Mr. Taylor added. "There seems to be little appetite for those projects. Everybody's plate seems to be full, but these things go in cycles."

Mr. Taylor and other observers say that while bank chairmen and presidents have become more active in this area, they are just beginning to confront issues that could transform the

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back office even more radically during the 1990s.

"Bankers should be asking, What is the ultimate role we want technology to play?" said Diogo Teixeira, a McKinsey & Co. consultant and coauthor of "Technology in Banking," a 1990 book that has won wide acclaim in the industry.

Mr. Teixeira predicted that as the analysis proceeds, many bankers will conclude that processing is not their business, or is just too burdensome. This would lead them to farm their processing out – sometimes called outsourcing – to computer service specialists. Some are already moving in that direction, with CEOs making the ultimate decision.

Old News at Small Banks

CEOs' close involvement does not come as news to small banks. With managers few and organizational structures flat, their operations decisions have long been made at the top. Among institutions in the survey with $75 million to $250 million in deposits, 9% of CEOs manage technology directly and 85% have the senior technology official reporting to them.

But even as technology has grown in complexity, larger banks with far more elaborate management structures are endorsing close CEO oversight. More than 90% of banks above $250 million in deposits assign day-to-day technology management to a senior or executive vice president, and 70% have that manager reporting to the chief executive.

The big-bank CEOs' closer involvement picked up in the early 1980s.

Back-office machinery and personnel costs were major contributors to annual expense increases of 20% or more at some large banks in the early 1980s. CEOs took it upon themselves to rein those costs in, which required closer working relationships with the managers of those areas.

Cooperation and understanding were lacking. In a 1986 Coopers & Lybrand survey of senior management attitudes to technology in banking and financial services, one-fourth of 250 executives said they were not knowledgeable enough to make competent automation decisions.

"Bankers should be asking, What is the ultimate role we want technology to play?"

DIOGO TEIXEIRA
Consultant
McKinsey & Co.

The entreaties of consultants and in-house technologists notwithstanding, many top managers said they did not view technology investments as a route to competitive advantage. Hence the concentration on expense control, in which nontechnologists could wield considerable power.

Coinciding with the cost inflation was the beginning of the bank merger boom, which forced senior-level strategists to identify the mutual benefits – known as synergies – in a combined organization. Invariably, operations budgets and centers were consolidated, with technology decisions increasingly centralized and put higher on the management ladder.

Four of five respondents to the *American Banker* survey reported that their holding companies exert at least some influence over their banks' technology decisions. Half the banks with more than $250 million in deposits had been involved in a merger over the past two years, and almost all of those had combined or planned to combine such key operations as data processing, communications, and corporate accounting.

Tensions Linger

It stands to reason that the people responsible for these critical areas and their sizable budgets – hundreds of millions of dollars a year at the biggest banks – would gain prestige and influence in the management hierarchy.

But it did not happen overnight, and some of the old tensions linger between general managers and technical experts.

Despite his reputation as one of the foremost information systems officers in private industry, let alone banking, Michael Simmons moved this year from the top technology post at BankAmerica Corp. to a similar job at considerably smaller Bank of Boston Corp. It was said to be no coincidence that Mr. Simmons departed just before a change of CEOs at BankAmerica.

And a dispute with new senior managers at First Fidelity Bancorp. in New Jersey led to the resignation this spring of executive vice president Gary Provo, who reportedly resisted his superiors' desire to adopt outsourcing.

The headline-grabbing visibility of such moves, and the strong hands played by chief executives Richard Rosenberg at BankAmerica and Anthony Terracciano at First Fidelity, serve to underline technology's arrival as a key banking function.

"The most frequent complaint I hear from CEOs is that they may be spending $300 million or $400 million a year on technology, but the managers of the technology lack an understanding of the business they are serving," said John Diebold, a prominent automation consultant for some of the largest banks and corporations.

Technology managers who can combine their demonstrated competence with a broader business knowledgemay very well be in a position to run the whole show. □

"CEOs Sound Off"

IN TODAY'S CUTTHROAT environment, bankers are using technology to gain a competitive edge.

According to American Banker's technology survey, one third of the operations executives questioned said the CEO at their banks totally or substantially supported a strategic investment in technology. Nonetheless, banking's top leaders approach technology from different directions, with some using it to control costs, and others to streamline the flow of information or help with lending decisions.

In an attempt to measure the industry's expectations for technology, business writer Rich Ringer asked chief executives: What role does technology play at your institution, and what are your strategic plans?

Barry F. Sullivan, Chairman/CEO, First Chicago Corp.

We don't get involved in technology just for the sake of creating something new. We want technology to help us accomplish certain tasks, including cutting costs, finding new efficiencies or — most important — improving our services.

For example, take our commitment to electronic data interchange. In 1985 we made the decision to pledge time and resources to EDI, because we believed the technology could be the most important development in the 1990s.

We wanted to take a strategic approach to EDI, which meant using it to do our job faster and better. The technology helps our customers, and that's a critical part of our strategy as a relationship bank. Moreover, we expect that it will soon generate fees and earnings.

Harry B. Brock Jr., Chairman/CEO, Central Bancshares of the South, Birmingham, Ala.

So far, technology has helped us more in the area of productivity than it has in terms of revenue. That's because we're not large enough to have a research and development budget that would put us on the leading edge of any new product or technology.

What we try to do is to stay no more than 18 months behind the capabilities of leading-edge companies. That approach is enabling us to save a lot of money.

Our size precludes us from sinking too much money into R&D, but we're not really at a disadvantage because of that. Through the years, we have been an efficient operator. And as long as we can maintain relatively strong overhead ratios, then we'll remain competitive.

Andrew B. Craig III, Chairman/President/CEO, Boatmen's Bancshares Inc., St. Louis

We believe that new technologies will be the key to enhancing our services, delivery capabilities, efficiency, and profitability.

Many banks are demanding that new technologies do more than crunch numbers faster. Recent developments in voice and data communications will help banks to deal with their

"Communications technology in the 1990s will be as important as data processing was in the 1970s and 1980s. We expect that better communications capabilities will help us serve our retail and commercial customers and give us speedier access to the market."

Andrew B. Craig III
Chairman/President/CEO
Boatmen's Bancshares Inc.
St. Louis

customers and employees in a precise, intelligent way, delivering information whenever and wherever it's needed.

Communications technology in the 1990s will be as important as data processing was in the 1970s and 1980s. We expect that better communications capabilities will help us serve our retail and commercial customers and give us speedier access to the market.

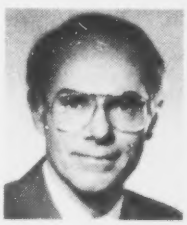
B. LaRae Orullian, Chairman/CEO, The Women's Bank, Denver

We went in-house with a computer system last May. Thus far, it has provided us with information that has enabled us to develop new products and target new segments of the marketplace.

Technology will play an increasingly important role in banking and other industries. But what drives technology — and this is a crucial point — is people. You need skilled people to put technology to work and to provide a one-on-one relationship with customers.

We are in the process of training our employees in new technologies. And when hiring, we are making sure that people have basic technology skills.

We think a bank is best served when it uses technology to provide old-fashioned service.



L. Scott Nelson, Chairman/President/CEO, First Security Bank of Utah, Salt Lake City

With the declining costs of hardware and software and the fact that with the advent of the personal computer revolution equipment is becoming smaller, we expect technology to play an increasingly important role in our institution.

The unit costs of completing a task have dropped considerably from the old mainframe days, when you did things in huge chunks with very expensive programs. As a result, we can afford t be creative, and we can afford to think about the future.

Right now, we are installing a PC at every desk in the branch bank. All of them will be networked in. That will enable us to have more and timelier information about a customer's accounts at our fingertips. As a result, our employees will become more like airline reservation people, whose quality of service has really improved over the past few years. We'll be better able to answer questions — whether customers ask them in person or over the phone.

John B. McCoy, Chairman/CEO, Banc One Corp., Columbus, Ohio

Partly because banking is a regulated industry, one of the best ways we can get an edge on our competitors is through technology. For example, over a three-year period we used technology to process a cash-management account for Merrill Lynch. During that time, we had no competition.

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"In terms of consumers, we're looking for ways to use technology to improve our delivery of products and services. And we're taking technology into the small-business marketplace and into home banking."

LEONARD J. EATON JR.
Chairman/CEO
Banc Oklahoma Corp.
Tulsa

We recently entered a joint venture with Dallas-based Electronic Data Systems to build a new data-processing system that will allow customers to get more comprehensive information about their various accounts. We hope the system will boost our average number of accounts per customer to two from about 1.3. If we can get to that point, we'd be satisfied with our customer base.

When we acquire a bank, technology is probably the biggest way we can save money. We can recoup the costs of acquiring a bank with $1 billion in assets over a two-year period if we reduce data-processing costs by about 50%.

Leonard J. Eaton Jr., Chairman/CEO, Banc Oklahoma Corp., Tulsa

We want to be known as a leader in technology — which usually means being first with the latest and greatest.

We were the first bank in Oklahoma to have an electronic cash-management system. And in terms of our consumer services, we're looking at specific applications on the retail side of the bank.

Also in terms of consumers, we're looking for ways to use technology to improve our delivery of products and services. And we're taking technology into the small-business marketplace and into home banking.

In the area of personal computers, we want to develop software and then make products that are a little more basic and a little less expensive. That will help us to better penetrate the home-banking market.

We're also involved in debt cards, and in the future we're going to use technology to add value to the cards.

Currently, the debt card works at our transfer network, the automatic teller machine network. In 1991, we hope to introduce point-of-sale debit card capability.

W.W. Philip, Chairman/CEO, Puget Sound Bankcorp., Tacoma, Wash.

We think that technology will allow us to provide better service to our customers, both retail and corporate – hopefully on a more cost efficient basis. That's the primary strategy we're looking to develop.

For a $4 billion asset bank company, we've made a rather substantial commitment to technology during the last eight to ten years. It's been important to us.

We have three banks, soon to be four, and one thrift. The thrift was not on the same computers systems as our banks. Getting it merged was difficult and time consuming.

Yet we've been able to reduce staff in some areas. But by the same token when you're drawing a new computer system, you often have to hire additional staff to take care of the volume of business. So far, we're able to handle more transactional volume with the same number of staff.

We have an on-line teller network and platform system for the retail side, which is where the bank is really making a big push in technology. And we have a service, Telebank, in which our customers can move around funds in their various accounts. □

Operations Chiefs May Be Ready For A Shot at CEO's Slot

BANKS' RELIANCE ON AUTOMATION IS EASING THE WAY FOR TECHNOLOGY DIRECTORS TO REACH THE UPPER ECHELONS

TECHNOLOGY OFFICERS are no longer second-class corporate citizens. Many now have broad-based banking skills and are included in the senior-management loop. As a result, say Gordon Grand III and Norman D. Sanders of the New York-based recruiting firm Russell Reynolds Associates Inc., the operations area is attracting a new breed of executives who are better positioned for a shot at the CEO's slot.

An operations specialist in the CEO's suite?

Just a few years ago, amid the widespread impression that technology specialists didn't have the right stuff to pilot an institution, that scenario might have seemed unthinkable.

But the banking industry's increasing dependence on technology and the broader-based skills of a new generation of operations leaders is narrowing the gap between the technology trenches and the pilot's penthouse. Many technologists make more money, report directly to the CEO or one tier below, and run bigger organizations with bigger budgets.

Nearly half of those who responded to the *American Banker* technology survey still thought it somewhat or extremely unlikely that within the next five years someone with an operations background would grab a slot as corporate CEO or president. But this year, the percentage of those responding that such a prospect was extremely unlikely amounted to 23%, down from 38% in 1988, the last time *American Banker* asked the question.

One reason for this shift is clear: Operations people are no longer second-class corporate citizens.

Banks have increasingly come to rely on sophisticated information systems. Presently, 50% of a bank's costs are in operations and technology, and that figure promises to loom larger.

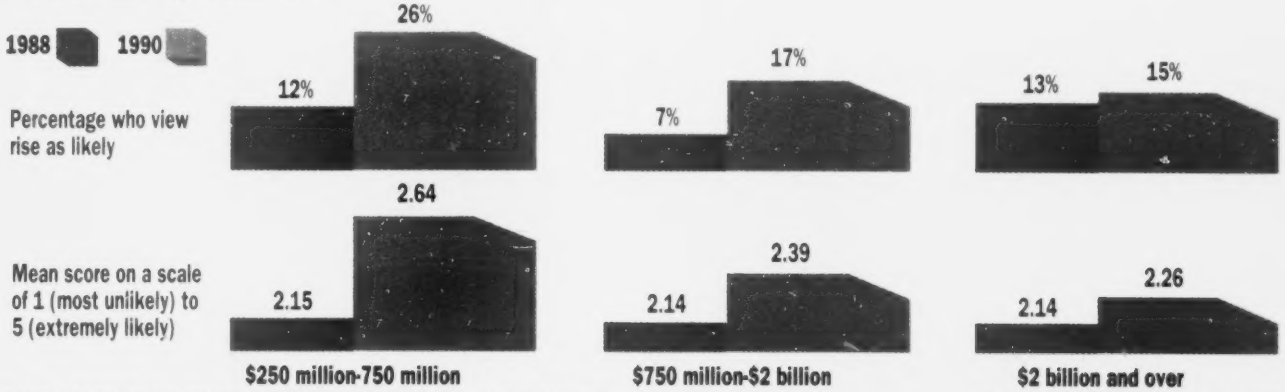
The net impact: chief information officers and technology bosses now

---

Gordon Grand III is a managing director of Russell Reynolds Associates, Inc., and is co-leader of the firm's commerical banking recruiting practice. Norman D. Sanders, also a managing director, leads the information systems recruiting practice.

A Technologist As CEO?

Managers have become more optimistic about a technologist's ability to rise to president or chief executive officer (banks ranked by deposit size)



Bases: 171 banks in 1990, 188 in 1988, with $250 million or more in deposits

Source: American Banker Technology Survey 1990

have enough clout to be included on management committees. Partly because of this exposure, many of them have amassed a wide array of skills in cost cutting, developing new products, managing big-budget operations, and delivering services. Many also are learning the ropes in areas such as capital and liquidity requirements.

Moreover, a tech chief nowadays is more likely to be a strong leader with superior management skills and an institution-based – rather than simply a unit-based – perspective.

Consultants are increasingly being asked to locate managers with a broad-based education, possibly an MBA, experience in marketing and strategic planning, and strong communications skills. Banks also are calling for candidates cut from an upscale corporate mold. Said one senior executive: "An aspiring [technology] candidate should look, act, and smell like a CEO."

Also leaving technologists better positioned for a jump to the top is a change in the management hierarchies at many banks. While lending and credit officers still tend to hold the top management positions – and thus have the chairman's ear and support – many senior operations officers no longer report to the comptroller but directly to the CEO or one of his immediate subordinates.

In charting an inside track to the top, brushing elbows with top brass can hardly hurt.

Pay Reflects New Role

Another indication that banks may be judging their operations specialists more ready to handle broader-based positions is the rise in their compensation.

Previously, the paychecks of technology chiefs were based on the size of their organization and budget. But today, with operations increasing in importance, their compensation is also a reflection of strategic skills and vision.

Two years ago, the technical information directors of banks were paid between $125,000 and $150,000. Today, most bank CIOs make at least $250,000, with strong performance-incentive plans in place for those who stay within their budgets and show initiative both in creating new products and adding value to old ones.

Meanwhile, many banks have actually spun out their information systems areas, setting them up as separate companies with profit and loss responsibility and making the CIO president of the company. They have done this in response to the dramatic growth of the information systems function, particularly in terms of the size of the organization and budget. A 1989 survey by Russell Reynolds indicated that 75% of the financial services CIO's managed budgets over $140 million. That trend is giving technology chiefs the opportunity to steward big organizations.

Nonetheless, lending and marketing officers in the near term will continue to have an inside track to the top. Technology people are rarely perceived as having the same leadership and interpersonal skills as lenders, who tend to be more involved with regional businesses and nonprofit activities in the community.

In seeking a CEO, banks are aware that credit decisions are rarely made solely on the basis of rates, dollars, and other numbers. Lending officers understand people – usually, they have nurtured relationships with clients over many years.

By contrast, technology executives live in a more focused world. Their goal remains the timely delivery of bank products, information, and services in a quick, cost-efficient manner. That narrower role may continue to be an obstacle for any CIOs with an eye on the chairman's seat. □

Mergers

With practice, bankers are learning the art of the merger and reaping the reward of economies of scale. Speeding the pace of consolidation and cutting redundant data centers are a couple of strategies that savvy institutions are using to cut operating expenses.

Perfecting the Art
By Jeffrey Marshall 20

Case Study: Security Pacific
By Shimon-Craig Van Collie 26

Case Study: CoreStates
By Merri Rosenberg 30

Case Study: Hanover
By Yvette D. Kantrow 32

Skilled Hands In M&A Arena Finding Big Savings

By Jeffrey Marshall

LARGE INSTITUTIONS ARE MORE LIKELY TO BE INVOLVED IN MERGERS, BUT COMMUNITY BANKS OFTEN REAP BIGGER PROPORTIONAL SAVINGS

For years, banks have labored to shave operations costs in areas that become redundant after a merger. The process is still more art than science, but there is evidence that bankers are getting better at it.

Institutions that have gone through a merger in the past two years said they managed to save, on average, 15% of their combined operations budget, according to the *American Banker's* 1990 technology survey. That figure is well above the 11% reported last year.

While bigger banks are more likely to be involved in mergers, community banks are often achieving greater proportional savings. Twenty-five percent of the responding banks in the $75 million to $100 million deposit range said they had effected savings of more than 20% after a merger, compared with 18% of those with more than $2 billion in deposits.

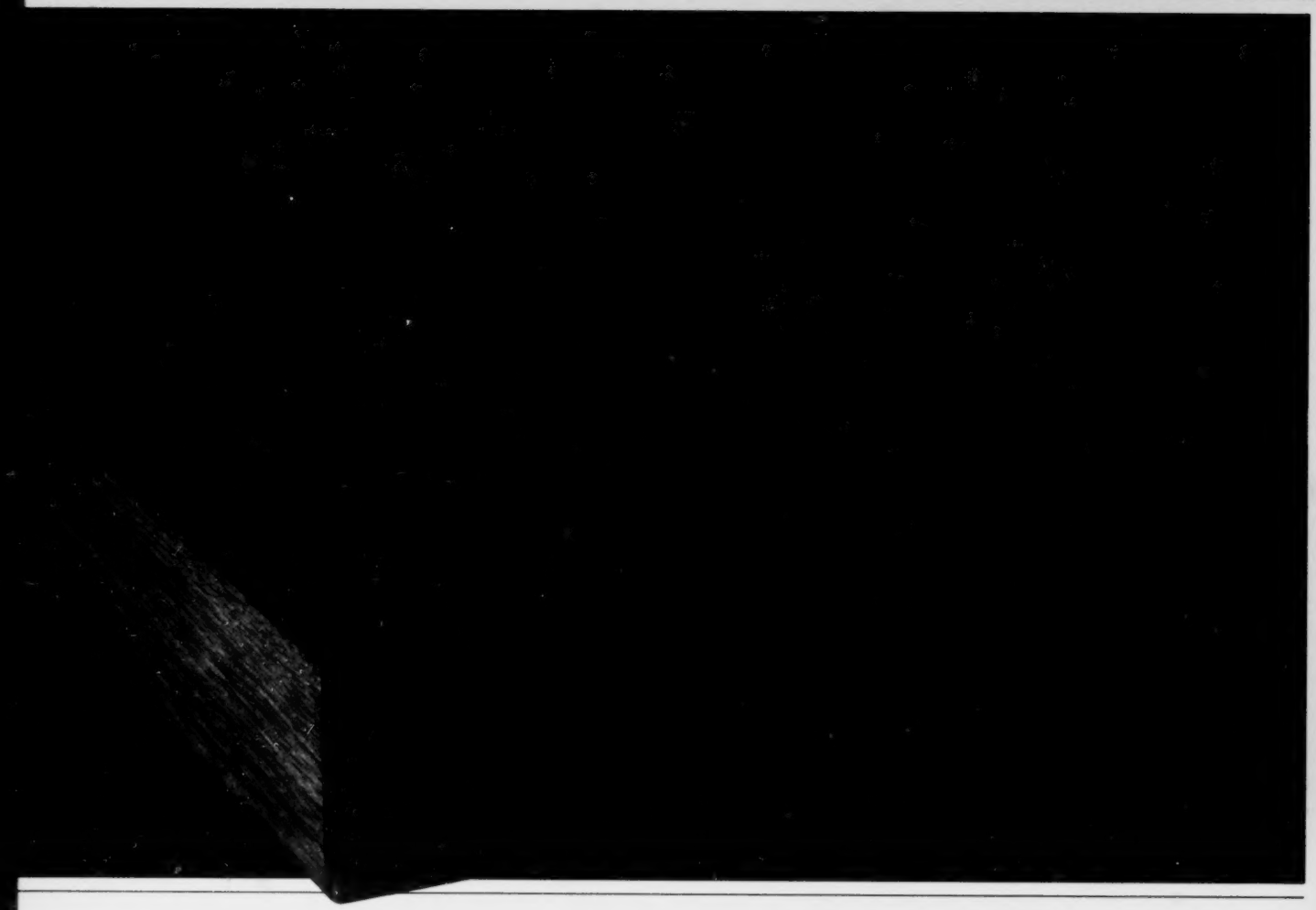
Economies of scale used to offer large banks the biggest savings. But smaller banks' savings opportunities have increased in recent years with better systems, which are geared to low-volume users, and they have gotten more sophisticated than ever in weighing alternatives, said consultant Jerry Cox. Mr. Cox is a vice president with Charlotte, N.C.-based Charles Brooks & Associates.

The *American Banker's* fourth annual technology survey was conducted in conjunction with Trans Data Corp., the newspaper's research affiliate in Wayne, Pa. In March and April, Trans Data polled 333 senior executives responsible for operations at commercial banks with $75 million or more in deposits.

Stellar Savers

While 20% savings may be a daunting goal for many banks, a few skilled hands have far surpassed it. Security Pacific Corp. has saved as much as 44% of expenses after centralizing certain operations, chief operating officer John Singleton told the ABA's National Operations and Automation Conference in May.

Banking companies that have made a string of acquisitions are the most practiced at wringing out operations savings. Banc One Corp. has been li-



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onized for its skill in this area. Charlotte, N.C.-based NCNB Corp. is also pulling hard to rein in postmerger costs. It said in May that it is merging multiple data and telecommunications systems into a central computing facility in Dallas, hoping to save 15% of its expenses in those areas.

But a lot of smaller companies are also proving adept at technology cost cutting.

Small Player's Game

Take First Colonial Bankshares Corp. in Chicago. With $1.6 billion in deposits, it is flea-sized compared with Banc One or NCNB. But First Colonial has been a busy buyer, building a chain of 15 banks in Chicago and its suburbs over the past few years. It has added four banks just this year.

First Colonial approaches postacquisition consolidation with a firm game plan, said president Robert Sherman.

"When we go into the bank, we have learned to move fairly quickly on those generic activities" like data processing and accounting, he said. "When we take over a back room, it's important to us to put them on the same data processing system.

"We don't tolerate lots of different systems," he added. "If it's an expense to get that done, so be it. In the long run, we feel it will be worth it."

First Colonial's operations are actually performed by a wholly owned, profitable subsidiary, BankersTech Inc. Its president, Jon Knutsen, said that the savings realized from consolidated operations have exceeded projections. "We have more volume leveraged over the same cost," he said.

Summit Bancorp., a successful regional company in New Jersey, has a somewhat different approach to cost containment. A few of Summit's eight banks still use service bureaus for item processing, but Summit keeps urging those banks to use its own data processing staff and software.

"We try to sell them on the idea that this will provide them with a better product line. And we charge them the same basic price as the service bureaus do," said executive vice president Eugene E. Schwarzenbek.

American Banker's survey found that bankers in mergers tend to identify similar systems targets for consolidation. Data processing, data communications, and programming and systems were the top three priorities for combining operations, just as they were last year. This year, 95%, 89%, and 87% of respondents cited those areas, respectively, as functions they had already combined or were planning to combine by the end of 1991.

"Data and item processing is a major issue. That's a piece that we try to address as soon as possible" after a merger, said Brent Thompson, a vice president at Fourth Financial Corp., Kansas' largest banking company.

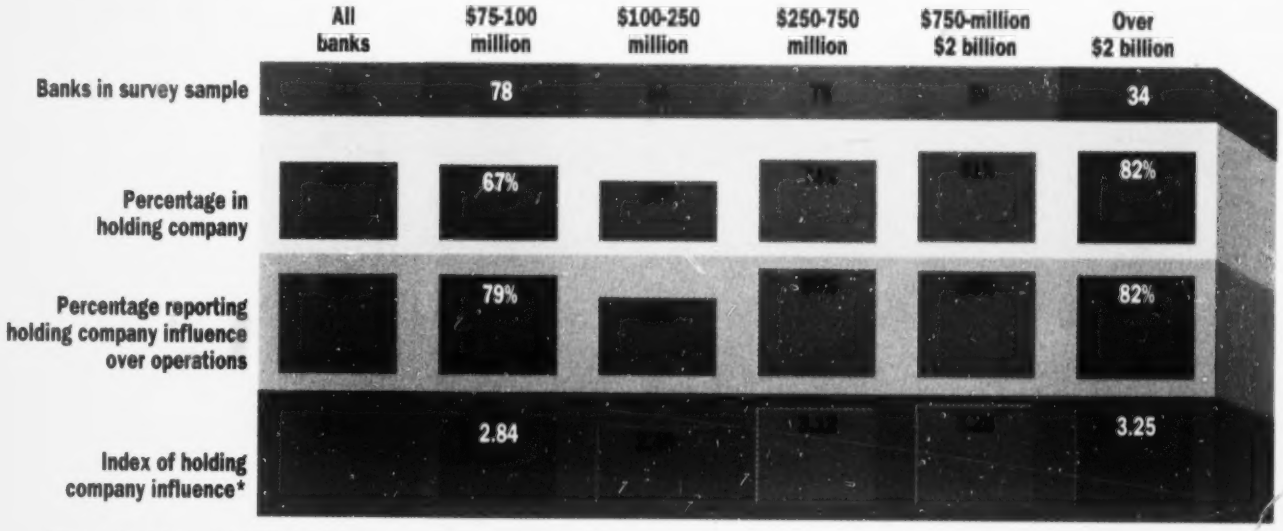
Common Systems Goal

After item processing comes accounting, said Mr. Schwarzenbek of Summit. "That allows us to efficiently report our consolidated financial picture," he said.

When operations managers address consolidation, they try to reduce the number of hardware and software

Holding Company Control

Banks grouped by deposit size



*On a scale of 1 (no control) to 5 (total control)

Source: American Banker Technology Survey, 1990

vendors to a minimum. "We want to operate in a common technical environment in a common facility and deliver a common computer utility nationwide," said O. Darwin Smith, president of NCNB Support Services Inc.

A Single Vendor

Fourth Financial converted to a single systems vendor, the Kirchman Corp., in the past year, said Mr. Thompson. Instead of wrestling with multiple application systems, it is now able to bring acquired institutions quickly onto a companywide standard.

Mr. Sherman of First Colonial said the company encountered a handful of different vendors as it acquired its network of banks, but unification "hasn't been the kind of challenge one might expect." Some of the acquirees had in-house systems – but not for long. "We put a bullet through those," he quipped.

With such standardization comes the movement toward a single data center. Some banks already have one; others, like NCNB or U.S. Bancorp. in Portland, Ore., expect to be there in a year or two.

Outsourcing Decision

Banks without a single data center will increasingly face the decision whether to establish one or to "outsource" operations like data processing to specialists. Some bankers are convinced that outsourcing – a buzzword currently reverberating through the industry – will pare costs; others are worried about losing control.

"I think it's difficult to release control because that is so integral to customer operations," said Richard Eichhorn, senior vice president for corporate development at U.S. Bancorp. "There's a natural reluctance."

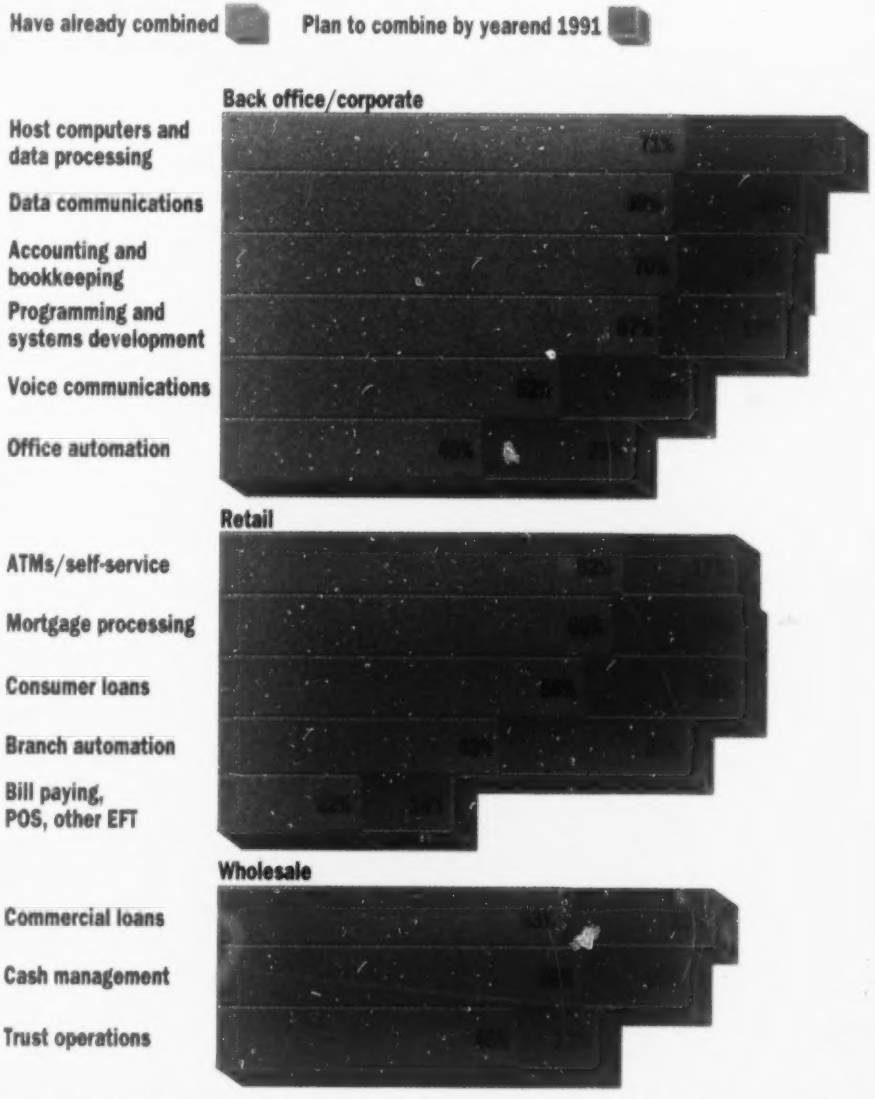
"Our goal is to keep everything in-house, to keep our control," said Mr. Schwarzenbek of Summit.

But First Colonial, which has effectively outsourced to its own company, believes it made the right move.

"We knew that we were going to be acquirers and that we needed the muscle of a much larger data processing and systems operation," said Mr. Sherman. "We chose to be serviced by someone else. We never wanted to find ourselves in a position where we wanted to make an acquisition but the data processing function was holding us back." □

Consolidation Trends

Percentages of banks that merged operations over the past two years (grouped by types of activities combined)



Base: 121 banks listing merger activities

Source: American Banker Technology Survey 1990

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WE MAKE IT HAPPEN

Security Links Myriad Branches

Bank accelerates pace of consolidation, saving $150 million in labor costs – so far

By Shimon-Craig Van Collie

As executives at newly consolidated institutions move to eliminate redundancies, technology budgets and operations are being combined – with varying degrees of success at trimming costs.

According to the American Banker survey, larger banks are more likely to be involved in mergers, while smaller banks are reaping bigger savings from them. The net result is that, through trial and error, bankers have gained the merger skills necessary to survive.

The following case studies illustrate how three companies fared after merging their technology operations. The first of these, Security Pacific Corp., claims to have saved about 44% of expenses after centralizing operations. CoreStates Financial Corp. has also proved adept at the consolidation game, having recently swallowed its third bank in seven years.

Meanwhile, Manufacturers Hanover Corp. is planning to trim the number of data centers it relies on from seven to two, with a projected saving by 1993 of more than $20 million a year.

Long a technology powerhouse, Security Pacific Corp. has stepped up efforts to knit together its far-flung branch network.

"The pace of our major projects is at an all-time high, and the amount we have invested in them is greater than ever before," said Dale Terrell, executive vice president of Security Pacific Automation Co., or SPAC, the bank corporation's information systems unit. "We're creating savings by reducing costs and increasing quality."

SPAC is the driving force in the bank's effort to consolidate its loan systems, and centralize its customer service, data-center automation, branch communications, and image processing operations. The unit has saved its $85.1 billion-asset parent about $150 million.

Leader in Automation

"They're a good operation with good numbers," said Robert Albertson, vice president of Goldman, Sachs & Co., New York. "To date, not many big banks have been able to create a common system over a broad geography, but they're definitely a leader in that area. SPAC's tentacles are broadening into the whole company."

SPAC was formed in 1988 partly to create a common set of application, product, and delivery systems and to consolidate operations in consumer-loan accounting, commercial loans, demand and time deposits, and delivery systems. By the end of 1990, SPAC will have completed the loan portion of the program, having melded into one system 15 different systems for loan originations, consumer and commercial loans, and collections.

"That's the model we're following for all of our systems," Mr. Terrell said. "Our target date to convert the deposit system in California is early 1991. The other stages should be completed in 1992."

A Place for PCs

There are similar plans for the bank's electronic delivery systems. SPAC is now piloting a branch delivery program to replace existing teller and platform terminals with personal computer and local-area networks, or LANs.

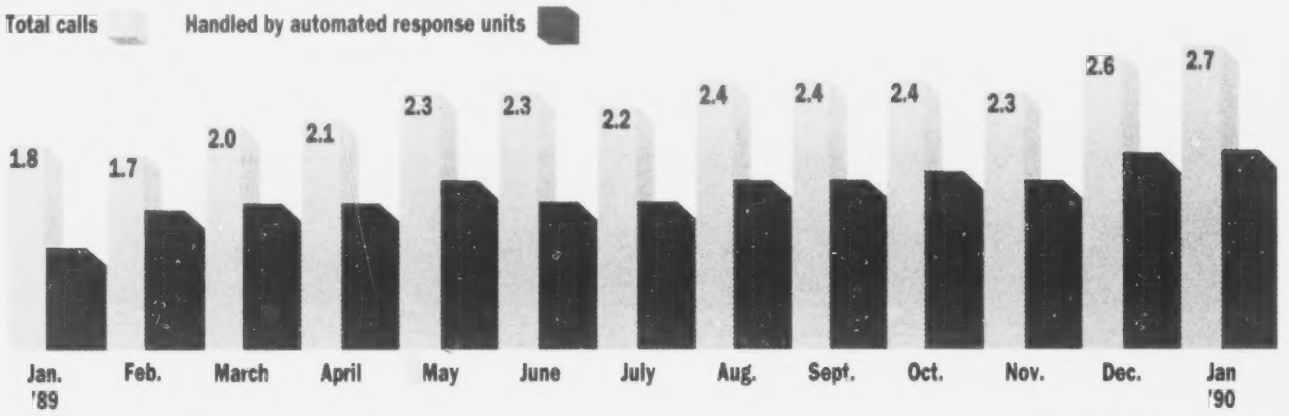
Mr. Terrell expects the pilot to show that PCs can coexist with the bank's older terminals, allowing SPAC to proceed with the changeover gradually as time and money allow. This transition strategy will also enable Security Pacific to install the PC/LAN configuration at newly acquired banks and plug them into the centralized system.

PCs and LANs are already being

Shimon-Craig Van Collie is a journalist based in Oakland, Calif.

Automation Meets Customer Service Demands

Volume of calls to Security Pacific customer service center, in millions



Source: Security Pacific Automation Co.

used to consolidate the gains made by centralizing such branch functions as ATM deposits and night deposits. SPAC claims the configuration has facilitated a 15% saving in labor and added quality control for data coming out of its product and accounting systems.

In addition, the configuration has enabled SPAC to unify workstations for back-office tasks such as general-ledger and cash clearing. Traditionally, such areas were independently staffed, but now they are part of a generic system that can distribute work loads more evenly.

"We're moving data to where the workers are, instead of building systems that access data from a central computer," Mr. Terrell said. "It's been a great payback."

SPAC has also bolstered the retail bank's 24-hour customer service area. Up to 60 transactions can now be handled by phone, relieving the workload at branches and allowing for extended banking hours and cross-selling.

At the same time, the unit has reduced its primary data centers from five to two – one in Seattle and one in Brea, Calif. – thus generating an additional estimated saving of $5 million a year.

Meanwhile, further gains are being made in automating functions within the centers. For example, robots load and remove cartridge tapes for production runs. IBM computers at the bank's satellite data centers are being run from the primary centers without human intervention. Internal bank memos are being transmitted electronically rather than printed, and wherever possible, internal reports are being doubled up on the same piece of paper. As a result, the use of certain types of paper has dropped 30% to 40%.

Hooking Up Branches

These activities are joined by SPAC's communication network, completed in March, which consists of 17 major nodes linked by 51 proprietary communication lines that run along the West Coast and east to New York. The network has enabled the unit to trim expenses to one-third the total before integration, said Lawrence Dorf, executive vice president for SPAC's network and computer services. The lines are part of a so-called T1 system, a digital cable capable of simultaneously transmitting 24 voice communications, thereby reducing the number of lines required.

Next, SPAC will hook branches to the network using a Uniform Access Network, or UAN. This service will combine all the branch functions – including ATM, teller terminals, alarm systems, and voice – into one T1 service. In the future, UAN also is expected to support image processing, delivering documents electronically for viewing at branch offices.

Pilot Program

"We know that UAN will double our communication capacity in each branch," said Mr. Dorf. "We also estimate a 24% reduction in communication expenses for the branch functions."

Meanwhile, SPAC's ambitious image-processing project is moving ahead at full steam. The unit's pilot program will get under way at the end of this year, with a target to roll out high-speed image processing by early 1991.

Officials say the estimated payback on the program will be a 30% to 35% reduction of the labor force involved in check processing. □

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These systems provide the means to easily create new products and modify them quickly as conditions change. Labor-intensive and burdensome manual balancing tasks are automated, thereby improving efficiency and leading to higher productivity.

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ALMeX extracts asset/liability management data from the Dimension 4000 deposit, loan, and general ledger applications. It enables the Asset/Liability Manager, without programming intervention, to reformat the data and load it into any PC-based Asset/Liability Management model.

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CoreStates Masters Art of Merger

Aiming for economies of scale

By Merri Rosenberg

On the M&A dance floor, CoreStates Financial Corp. is tapping out a nifty two-step.

The institution's consolidation strategy is to make the banks it snaps up dance to its technological tune.

Few institutions have proved as adept at using mergers to achieve economies of scale as Philadelphia-based CoreStates, a bank holding company with 280 branches and about $22.2 billion in assets: The institution recently gobbled up its third bank in seven years, achieving significant cost savings in the process.

"The driving force is to consolidate and convert the acquired banks to CoreStates' technological system," says Robert Gilmore, executive vice president of CoreStates Transaction Services, the unit that handles the company's back-office operations and data processing functions.

"All of our acquisitions and consolidations have embraced a similar strategy."

Consolidating Equipment

Under this approach, a CoreStates team consolidates equipment of the merged bank – for example, by transferring computer data centers to Corestates' own facilities. The next step is to make the equipment compatible with that of CoreStates.

"We have a single back office to support all of the banks," Mr. Gilmore says. "But we continue to support the bank's systems as they exist. Even with the first physical consolidation, we pick up a great deal of savings."

The most recent example of this strategy came with CoreStates' acquisition in March of First Pennsylvania Bank. Before that, CoreStates absorbed New Jersey National Bank in 1986 and Hamilton Bank in 1983.

Once CoreStates picks its prey, it moves quickly. The First Pennsylvania acquisition was completed just six months after it was announced. By late May, First Pennsylvania's data centers were moved to CoreStates' facilities. Mr. Gilmore expects First Pennsylvania's major systems to be converted or transferred by September.

Previous mergers took longer, Mr. Gilmore says, but he adds, "We're getting better with practice."

The institution's main goal, he says, is to "centralize operations to achieve economies of scale by standardizing CoreStates' products as quickly as possible." And toward that end, CoreStates' first move in any acquisition is to address duplication of managerial positions.

"Part of our job is to determine who the best people are out of the combined group," Mr. Gilmore says. "Because of the tight time pressures, it forces two organizations to form working relationships very quickly."

Merging personnel is trickier than transferring the technology, Mr. Gilmore says.

"People issues can bog an organization down," he says. "People by nature resist change. If they sense that they can block change, they will do it.

"We make the direction of the move very clear. If we aren't ambiguous, then people will get behind [the move]."

Quantifying the Savings

A CoreStates spokesman says that the operations and technology savings from consolidation is about half the total projected savings from the merger. Some observers have come up with more specific numbers.

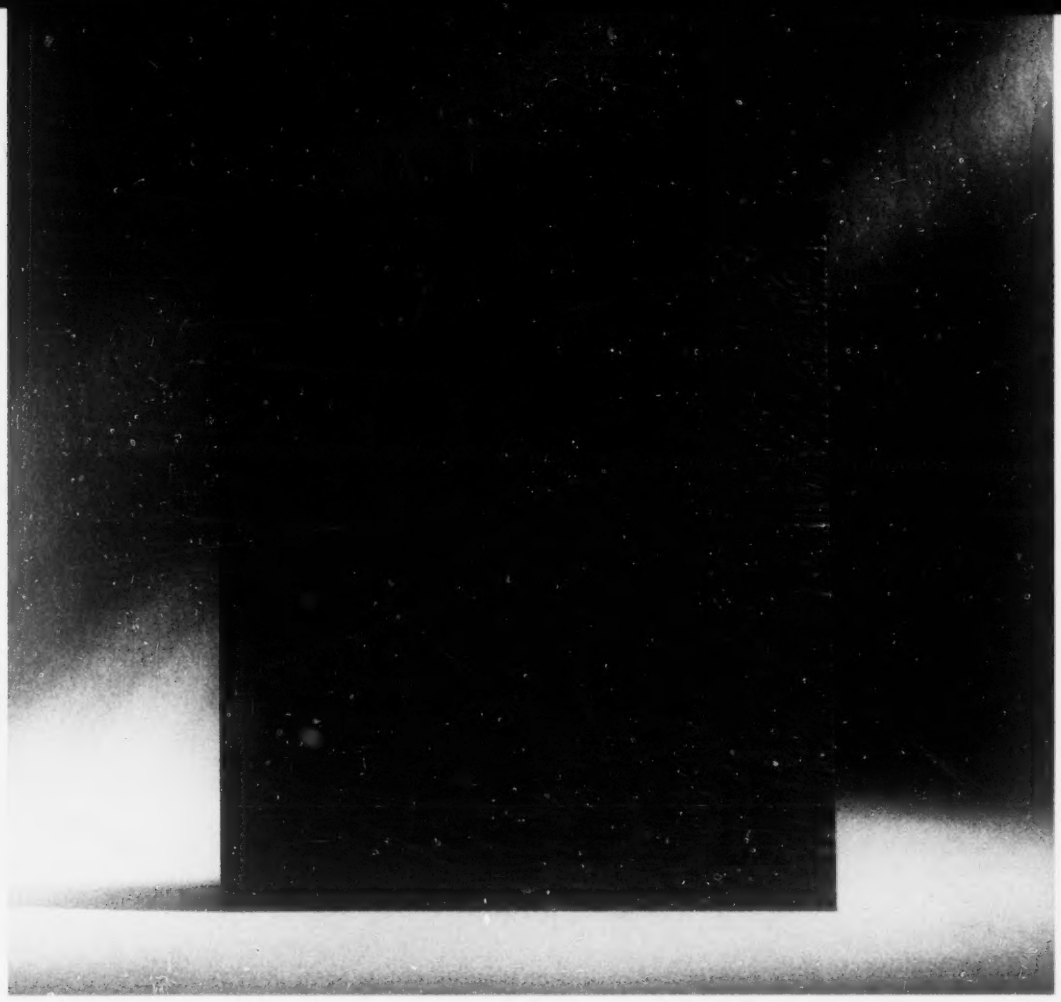
"When CoreStates talked about the [First Pennsylvania] merger in September, they said that from consolidating operations and systems they expected savings of $42.5 million within 16 to 18 months," says Thomas McCandless, an analyst with Goldman, Sachs & Co., New York.

"These are fairly hard numbers, and I don't sense a lot of glitches," Mr. McCandless says. "With an in-market merger like this, there are a lot of redundancies that can be eliminated more easily. You just don't need two back-office operations in the same city."

Although the benefits of a merger usually accrue to the acquirer, CoreStates says that when done right, a deal can be mutually advantageous.

"In one particular area, a bank had a mainstream technology that CoreStates wanted to adopt," Mr. Gilmore says. "We assume, going into a merger, that the bank will go over to CoreStates. But we're not stupid." □

Merri Rosenberg is a financial writer based in Armonk, N.Y.



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Hanover Whittles Data Centers

Two sites will carry the load

By Yvette D. Kantrow

Manufacturers Hanover Trust Co. is again busy consolidating its operations.

The nation's seventh-largest banking company – which gained considerable attention in the 1980s when it consolidated operations in its wholesale division – is seeking to trim its operating expenses companywide.

Toward that end, Manufacturers will eventually cut the number of data centers it relies on from seven to two. By 1993, the reduction could yield savings of more $20 million a year.

"Our objective is to consolidate, lower our costs, reduce our complexity, and operate the most efficient way we can," said Michael J. Pasiecki, a senior vice president who played a big role in the wholesale unit's consolidation.

Data Centers Cut

That project reduced from eight to two the number of data centers used by Geoserve – Manufacturers' wholesale information and transaction services group – and was the first step in the current cost-cutting crusade.

Under terms of a reorganization announced in May, the company consolidated five operating sectors into four: global banking, regional banking, operating services, and developing markets. The most extensive consolidation occurred in Manufacturers' wholesale businesses, where the corporate banking, investment banking, and international banking divisions were folded into one global banking unit.

The bank initiated the most recent round of consolidation in July 1989. Coordinating the effort are H. Edward Nyce, an executive vice president who reports directly to vice chairman Edward Miller, and Steven Sheinhert, a senior vice president.

"In the 1970s and 1980s, because of [the state of] technology at that time, we built lots of data centers," Mr. Pasiecki said. Different systems were needed to provide services specifically tailored to different parts of the banking company, he said.

"But today, because technology has improved so much, you can provide that uniqueness of service and get efficiencies and economies of scale."

The cost-saving potential of the program has given it high visibility within the corporation, executives in charge of the consolidation say. But that has put increased pressure on the group to provide top-quality service to the different businesses within the bank.

"We have to guarantee that we are going to be as capable or more capable of providing the necessary requirements for new products as we were before," Mr. Sheinhert said.

During the past decade, technological improvements have enabled the group to do just that. Nowadays, large mainframe and transaction-processing systems communicate with personal computers. And advances in distributed-processing technology allow large data centers to provide information that bank personnel need to make timely decisions, Mr. Sheinhert said.

When the project was initiated last summer, the first step was to decide how many data centers were required to serve the entire corporation and where those centers should be located, Mr. Nyce said. It was ultimately decided that one center should be in Manhattan's financial district and one in Wilmington, Del.

Jolted by Earthquake

But "in October, the earthquake in San Francisco threw an interesting wrinkle into our plans," Mr. Nyce said. "We saw, through the problems they had in the Bay Area, what could potentially happen if a major disaster occurred in the New York area."

Under such a scenario, he said, all the bank's data centers could be harmed, leaving the organization with no processing capabilities. Thus Manufacturers executives decided that one of the bank's data centers ought to be geographically distant from the other.

Meanwhile, other criteria were used to determine which of Manufacturers' eight large IBM and Digital Equipment Corp. facilities would survive.

"We started with the view that there was a certain infrastructure that would make sense," Mr. Sheinhert said. For example, some of the bank's centers had uninterrupted power supplies, which could keep it operating in the event of an emergency. □

Priorities

When technologists are asked to list their goals, improving customer service takes precedence over cost cutting or reducing staff. To further their strategic aims, banks will continue to invest in hardware, particularly personal computers.

Finances Take Back Seat
By Robert M. Garsson **36**

Spotlight Lingers on PCs
By Jason Forsythe **40**

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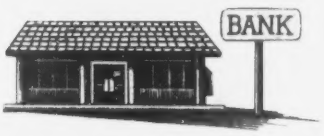

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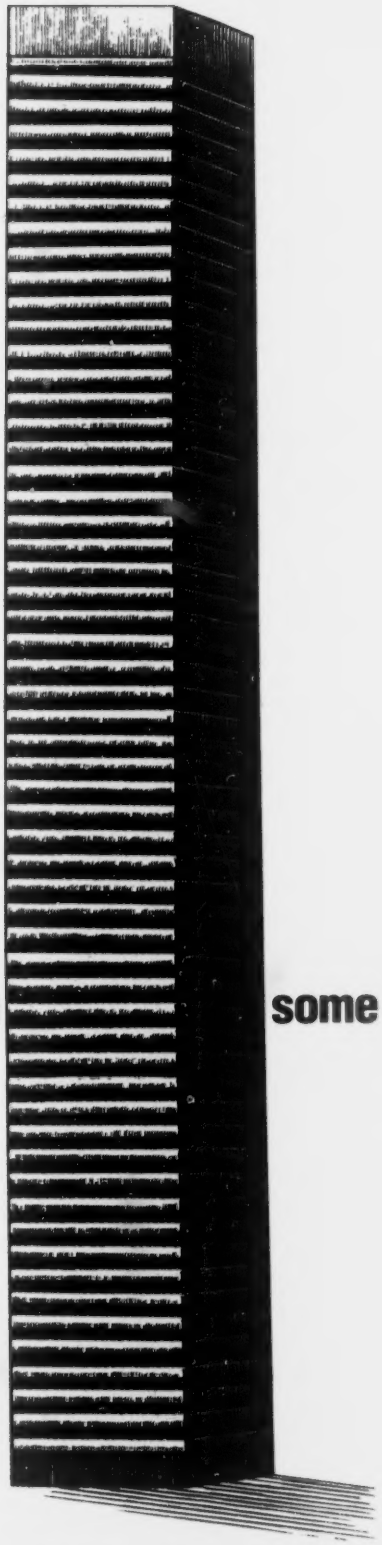

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Strategic Goals Play Primary Role In Planning Outlays

By Robert M. Garsson

MOST CITED OBJECTIVES OF TECH SPENDING ARE SERVICE QUALITY, IMAGE ENHANCEMENT

Ask bankers to describe the benefits of technology, and they will often say it improves efficiency or reduces operating costs.

Ask bank technology managers the same question, and the answers might surprise. According to an *American Banker* survey, operations managers assign strategic objectives – service quality, image enhancement, marketing capabilities – comparable or greater importance than hard-dollar paybacks.

Perhaps because the returns on technology investments are difficult to identify or measure, the vast majority of the 333 banks in the *American Banker* 1990 technology survey, regardless of deposit size, regard their operations areas as cost centers that support the various lines of business. Only about 15% of the banks with more than $250 million in deposits treat any of their back-office functions as profit centers capable of paying their own way with revenues.

Therefore, to many banking technologists, the return on investment is just as likely to be an improvement in service quality or marketing capability as it is cost or staff cuts. In fact, staff reduction was deemed the least important of six strategic objectives measured in the survey.

Service Is Paramount

The most important objective was quality of customer service, which was rated very or extremely important by 90% of the technology managers polled.

Three other strategic objectives of technology were on a par, falling within the survey's five-point statistical margin of error: cost reduction was cited by 72%, improving the bank's image by 71%, and increasing marketing capabilities by 67%.

Those objectives were followed by the ability to introduce new products quickly, at 61%, and staff reduction, at 47%.

The question was then posed a little differently. Technologists were asked to rate the objectives on a scale of 1 to 5, with 5 signifying the most importance and 1 the least. On this scale, quality of customer service rated a 4.48, improving image 4.03, cost re-

duction 3.95, increasing marketing capabilities 3.87, quick product introductions 3.77, and staff reduction 3.35.

"If you had to do a forced ranking, it wouldn't be the same at each bank. They would all rank high," said Michael Simmons, executive vice president and chief technology officer at Bank of Boston Corp.

Pressed for his own criteria, he said service quality would be No. 1 and cost reduction No. 2, with the rest following closely behind. That puts Bank of Boston in the mainstream, based on the survey responses.

"Justification for technology improvements is more rigorously managed than it used to be, and service quality is clearly No. 1," said Robert Dressel, executuve vice president at United Banks of Colorado, Denver. "The ability to add products, features, and quality to our delivery system is of paramount importance from senior management on down."

"Bankers are always willing to invest where they can improve the quality of customer service," said John Shain, president of Littlewood, Shain & Co., Exton, Pa.

The survey showed some differences in how institutions of different size view technology investments. They were most dramatic on the question of new-product capability.

Among banks with more than $2 billion in deposits, 79% said that objective was important. But among the smallest institutions, those with $75 million to $100 million in deposits, only 51% said that objective was an important reason for investing in technology.

Somewhat less dramatically, larger institutions – those with more than $750 million in deposits – were more likely to cite cost reduction than any other group. Among institutions in the $2 billion and up category, 76% said cost reduction was extremely or very important, compared with 80% of those in the $750 million to $2 billion range and 68% of those between $250 million and $750 million.

Among institutions with less than $250 million in deposits, the reading was 70%.

Similarly, larger banks were more likely to cite staff reduction as a reason for investment. Among institutions with more than $2 billion in deposits, 62% said staff reduction was extremely or very important. Only 34% of those with $100 million to $250 million said staff reduction was an objective, as did 42% of those with $75 million to $100 million.

But when asked about improvements in customer service, banks of each size were within a few percentage points of each other.

It is not difficult to interpret some of the differences. Technology is expensive, and product development requires the resources of large institutions.

"Maybe the top 50 banks can play in that arena," said Mr. Simmons, who joined Bank of Boston this year from BankAmerica Corp. "Most don't have the wherewithal to do it."

At large banking companies like Banc One Corp., new products come on line constantly, said Linda Antrim, vice president for marketing at Banc One Services Corp., a subsidiary of the Columbus, Ohio-based institution.

Sometimes a new product is only a modification of an existing one, a tailoring of a demand-deposit account service for a given market segment, for example.

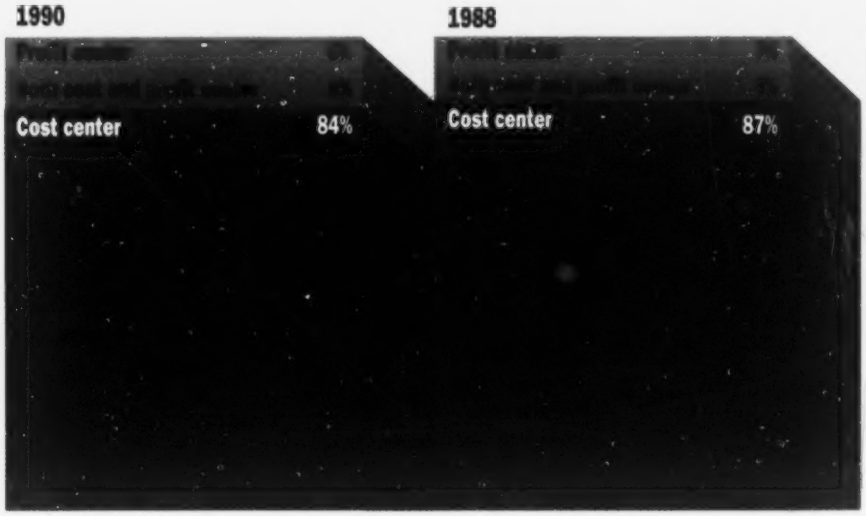
But Banc One introduces major innovations regularly, and most are driven by technology.

A year ago, for example, Banc One introduced Blue Max, a product that measures a customer's entire relationship with the bank and provides incentives for building on that relationship.

"It allows us to give the customer a better deal based on the degree of the relationship," said Ms. Antrim. The benefit might be a lower interest rate on a loan, or a higher rate on savings. With each step in the relationship – the opening of an individual retirement account, or a new certificate of deposit, for example – the benefit improves. □

Cost-Center Approach Dominates

Most bankers do not view operations as a profit producer



Bases: 171 banks in 1990, 188 in 1988, with at least $250 million in deposits

Source: American Banker Technology Survey 1990

The time has come for the top management of the bank, the CEO, to get involved in automation. Top management must face this fact and cannot wish that responsibility onto others.

Automation is no longer the intrigue and complexity that it has been for 30 years, and top management must realize that fact. The automation directions, strategies, and decisions

must come from bankers, not data processing people. For those CEOs who realize this, the bank can move ahead now. If they won't take the responsibility, then the bank will have to wait until the CEO is willing to become involved.

Automation is no longer decisions in hardware and software, but decisions in the art and science of banking.

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PCs, Software Looming as Top Investment Priorities

By Jason Forsythe

PROJECTIONS REFLECT CONCERNS ABOUT QUALITY OF SUPPORT FOR BACK-OFFICE OPERATIONS

Despite having stocked up on computer hardware during the 1980s, bankers are not expecting a decade of rest.

It might be logical to expect the industry to consolidate its computer investments by emphasizing software enhancements. But according to the 1990 *American Banker* technology survey, computers will remain a top budget priority. Particularly personal computers.

Fifty-five percent of senior operations and technology executives identified personal computers as an area in which they will concentrate investments in the next five years.

Applications software was the only other area garnering as much as a 51% response; personnel and training needs ranked third, at 44%. Both those relatively sizable responses reflect concern about the quality of computer software and the people needed to run back-office operations, now increasingly critical and demanding.

Thirty-one percent to 37% said their priorities include electronic funds transfers systems, mainframe hardware, automated tellers and self-service banking, data communications, and item processing.

These are among the findings of the fourth annual *American Banker* technology survey. Trans Data Corp., the newspaper's Wayne, Pa., research affiliate, interviewed operations and technology executives from 333 commercial banks with at least $75 million in deposits. About half the respondents represented banks with more than $250 million in deposits, and 10% came from institutions larger than $2 billion.

Widespread Interest

Banks of all sizes are interested in personal computers.

Likeliest to name PCs as a priority were banks with $250 million and $750 million in deposits; 66% did so. Forty-two percent cited mainframe hardware as an area of concentration, and 34% cited mini and departmental computers.

Small banks proved to be nearly as

Jason Forsythe is a business writer based in New York.

PC-hungry as bigger ones. Some 58% of surveyed banks with deposits under $100 million plan to invest in PCs in the next five years.

And the systems are making their way into the executive suite for use by senior managers with more traditional, commercial banking backgrounds.

"Like most CEOs, I came up through lending and corporate services," said Samuel McCullough, chairman of the $12 billion-asset Meridian Bancorp, Reading, Pa. "I've always taken an interest in data processing, but now for the first time I am installing a PC in my office, which will enable me to analyze and manipulate data from the mainframe, do profit reports, break out performance geographically or by product line."

Hardware and Software

The biggest banks proved likeliest to plan spending for applications software in the next five years. Seventy-seven percent of those with deposits of over $2 billion said they plan such spending, but only 35% of those with deposits under $100 million.

At the $210 million Stillwater National Bank & Trust Co. in Oklahoma, spending will be equally divided between personal computer hardware and PC-based applications software. Though Stillwater already has a substantial investment in PCs, it will need more of them once the systems are integrated with networking software, said Kerby Crowell, Stillwater's executive vice president and chief financial officer.

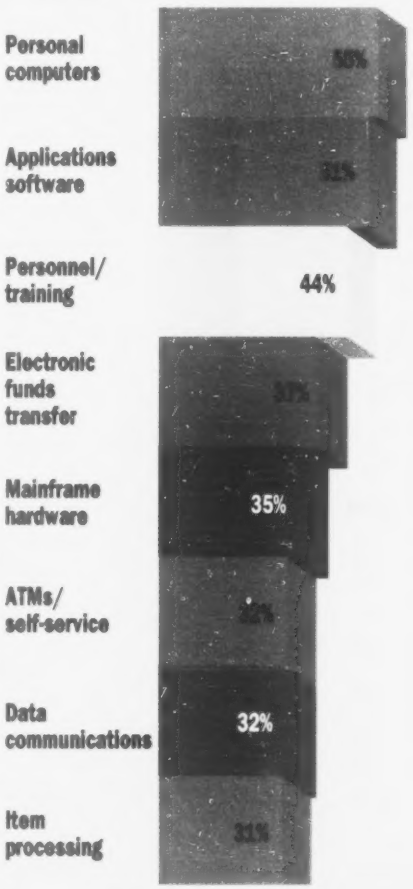
So far, 30% of the bank's employees use stand-alone PCs for routine clerical tasks and number crunching.

Tying It Together

"We've already got beaucoup of computers floating around here," Mr. Crowell said. "But as soon as we can figure out how to tie them all together, that number will just proliferate."

Investment Plans

Most common priorities for the next five years



Source: American Banker Technology Survey 1990

Mr. Crowell plans to spend on platform automation to improve sales and customer service.

PCs at their fingertips can help people who deal with customers sell certificates of deposit, take loan applications, and answer questions.

"We're not looking for new applications or new capabilities, just something that will help our personnel be more productive by letting them concentrate on selling rather that typing applications," Mr. Crowell said. "The only key they should have to hit to issue a CD is how many dollars are being invested. Any information already in the system should not have to be rekeyed."

At the much bigger Barnett Banks in Jacksonville, Fla., PCs and local area networks (LANs) to tie them together dominate the computer spending plan. Most of the money will go to linking the bank's service, sales, and telemarketing centers with compatible applications systems. The link will be made with PCs, new and old.

Barnett, with $30 billion in deposits, is looking to improve customer service by installing PCs at branch teller windows. Like Stillwater National, Barnett is automating platforms – and giving a sales orientation to the conventional transaction-processing functions. For example, if a car-loan customer mentions an interest in buying a home, that information can be shared through a LAN with the mortgage sales department. Mortgage can then advise the customer on rates and provide a filled-in application.

"Computers can really make it as easy as possible for the customer to do more business with us," said Roger Wiegmann, an executive vice president at Barnett. "Eventually, that will increase sales."

Using What You Have

Applications software spending, though less glamorous than new technologies such as expert systems and image processing, is an attempt to get better use of the technology already on board.

"We have to be better delivering the technology that is out there right now, as opposed to what we don't need," said Darwin Smith, president of NCNB Support Services Inc., a Dallas-based unit of NCNB Corp. The company is spending heavily to build a computing utility for all NCNB operations across the country, as well as to improve image-processing and electronic data interchange systems.

Mr. Smith said dollars will be best

"Image technology has been talked about for quite awhile. If its day hasn't come, it is surely around the corner."

O. Darwin Smith
President
NCNB Support Services
Dallas

spent on the low-tech areas of information management and technical training.

"There is a lot of talk about sizzle and leading-edge technology," he said. "But to retrieve information across applications – which is a priority for us – you don't necessarily have to invest in high tech." The trick is to reconfigure incompatible and often outdated software that has grown up independently in different divisions.

The goals: an enterprisewide relational data base giving easy access to all applications, and a staff trained to use it.

Pressure from Nonbanks

The tendency to sidestep exotic hardware and instead link software systems doesn't surprise industry consultants. As competition heats up, technologically sophisticated nonbank competitors are forcing banks to improve customer service.

Revamping application software let banks deal more knowledgeably with customers who do business with many of the bank's divisions. Linking applications lets a bank deliver products from one division with a knowledge of what the other divisions are doing.

"Enterprisewide customer data bases are becoming on of the most important aspects of the new systems," said William Storts, partner in charge of the banking industry for Andersen Consulting.

A Hot Technology

The hot technology of the moment is image processing. Ideally, it can save money by making duplicate storage of data unnecessary.

Images stored in a central data base can be retrieved on remote terminals. Monthly statements with images of signed transactions reduce customer inquiries and increase customer satisfaction; American Express already sends such statements to cardholders.

Image processing is now the province of banks with big transaction volume. The cost of entry is one reason, and that is expected to fall in the next five years.

But even today the savings can be great, said NCNB's Mr. Smith, in part because the advantages can be extended to credit and risk-control analysis.

"Certainly image technology has been talked about for quite a while," he said. "If its day hasn't come, it is surely around the corner."

Big Banks and Small

Mr. Storts said every superregional or money center bank plans to use image processing on checks or other documents. The *American Banker* survey found that 27% of those with deposits of over $2 billion plan to install image technology by the end of 1991 – and mostly for transaction processing.

Smaller banks remain far more cautious about taking the plunge. Thirty-one percent of the survey respondents – but only 23% of those below $250 million in deposits – said they would spend major amounts on item-processing hardware in the coming half decade.

Mr. Crowell at Stillwater, for example, said he is aware of image technology but will stay on the sidelines until there is a clear cost benefit. "We will be forced to become involved in it at some point, but we will not invest the resources to be the pioneers," he said.

In the meantime, PCs and intelligent workstations remain at center stage.

"We talked to banks across the country in a survey last fall, and the No. 1 area in which they expected to use technology was platform automation for enhanced computer power at the customer interface," said Mr. Storts of Andersen Consulting. "That ends up being intelligent workstations or PCs."

All indications are that, despite a seeming saturation of PCs in banking, there's still room for more. □

Evaluation

The benefits of expert systems, which can provide a consistency in decision-making that bankers crave – as well as those of image processing and telecommunications – are gaining recognition.

Boons from Expert Systems
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Banks Looking To Expert Systems For Competitive Edge

By Richard Layne

TECHNOLOGY AIDS QUALITY CONTROL BY PROMOTING CONSISTENCY IN DECISION-MAKING

After a fitful start with an emerging technology called expert systems, a sizable number of mostly big banks have come to realize that this much-hyped type of artificial intelligence can significantly improve performance in such areas as credit analysis and fraud control.

According to the annual *American Banker* technology survey, only 8% of institutions said they have an expert system and 14% are planning to put the technology in place by the end of 1991.

Credit Applications

But 21% of banks with $2 billion or more in deposits are using the systems, and 27% more are planning to install them by the end of next year.

"Driving that growth is a recognition that AI [artificial intelligence] might create more consistent quality, credit analysis, or service," Robert E. Moll, a director at the consulting firm Arthur D. Little Inc., Cambridge, Mass., said in an interview earlier this year. "Among bankers, there is a strong desire for this consistency."

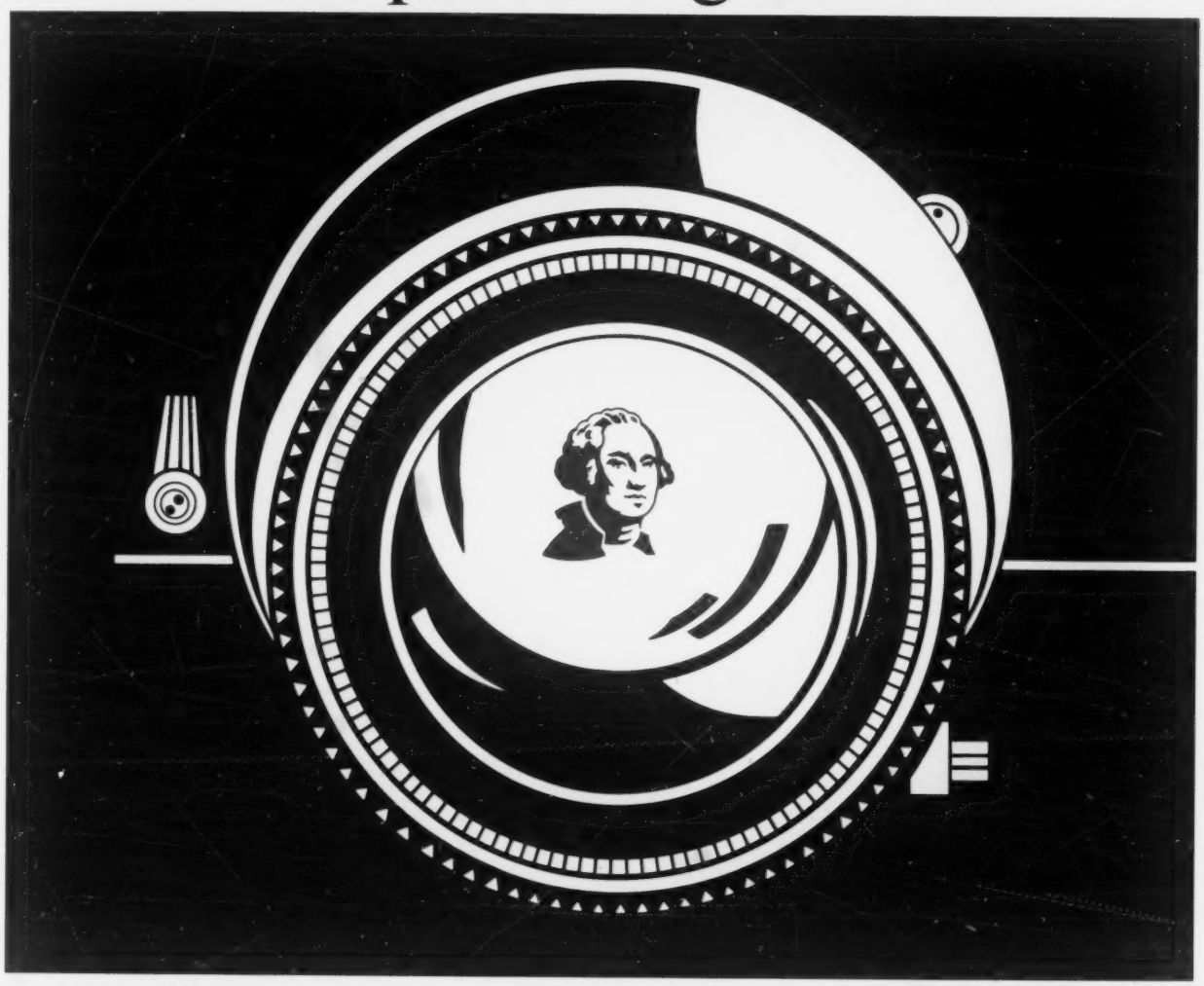
Expert systems, a branch of artificial intelligence sometimes called knowledge- or rule-based systems, are programmed to use the knowledge of an expert or group of experts to work through a problem by considering a long series of 'if, then' propositions.

This kind of system, which costs anywhere from $1,000 to millions of dollars to develop, is one of the new technologies that banks will employ to create information from raw data, according to Charles W. McDonough, a consultant with Andersen Consulting in Detroit.

The systems are often used in credit scoring and lending decisions that have well-defined analytical procedures. But the applications are wide-ranging, from sales programs for retail customers to fraud detection in credit cards or foreign exchange trading.

"If the application is chosen correctly, it can help the bank operate more efficiently or uncover new business opportunities," said Susan Garavaglia, vice president at Chase Manhattan Corp. and chairman of Smart FS, a New York-based group of financial service companies that exchange information on new and emerging technologies. Chase has expert sys-

TRW puts the major benefits of image transaction processing in focus.



Some of the world's leading financial institutions are seeing the bottom-line results of increased productivity and sales that result from using Image Transaction Processing systems provided by TRW Financial Systems. Their return on investment comes from more than reducing unit processing costs as much as 40%. It comes from new marketing opportunities and higher levels of current customer satisfaction.

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Call Christopher Huppert at (415) 548-8572. Or write him at TRW Financial Systems, 2001 Center Street, Berkeley, CA 94704. He'll put the major benefits of TRW's Image Transaction Processing systems in focus for you.

TRW

TRW Financial Systems, Inc.

tems in its trust and trade products areas. It also has an expert system that augments payroll processing.

Finding the Rationale

Banks have been tinkering with this technology since the mid-1980s. The first systems were built on expensive, specialized processors. The software was not capable of sharing information with a data base on a run-of-the-mill computer, so the expert system had to perform all processing functions that an application needed, from storing and retrieving information to performing mathematical calculations. And technologists, eager to explore this new processing capability, built systems that did not always address business problems.

Award-Winning Effort

"It was sort of, 'Expert systems are the answer,' " said Craig Atkinson, vice president in the strategic technology and research group at Manufacturers Hanover Trust Co. "But what was the question?"

Manufacturers has emerged as a leader in creating systems that use rule-based programs. The bank is the only two-time winner of an award from the American Association for Artificial Intelligence. As part of its commitment to using this technology, Manufacturers built an expert system that determines whether a particular processing need is a candidate for an expert system, said Mr. Atkinson.

"AI can solve problems that are difficult to solve using conventional techniques," said Mr. Atkinson.

Innovative Approach

Manufacturers and other banks have adopted a new approach to creating expert systems, one that weaves existing data bases and processing capabilities with a veneer of artificial intelligence. "Expert systems are becoming integrated into traditional business processing," said Mr. McDonough.

"The best leverage we get is to take existing technology and come up with a new application," said Elizabeth Byrnes, a Ph.D. in psychology who joined the bank four years ago to help design these new systems. "Systems that use AI are now hybrids."

Ambitious Agenda

One of Manufacturers' award-winning systems is Inspector, a foreign exchange auditing system. It sorts through the information on foreign exchange deals gathered on existing data bases, mainframe computers, and a communications network. About 20% of Inspector is an expert system – "the icing on the cake," said Ms. Byrnes.

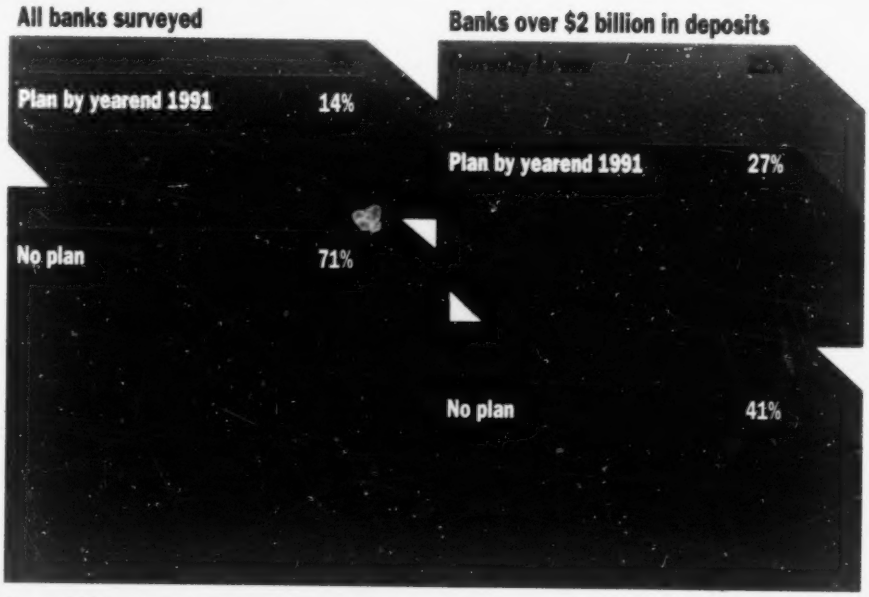
Some banking companies have ambitious plans to use expert systems. First Wachovia Corp. for example, is installing its first such system, which will help clerks handle student loan deferments. In two years the bank will have a dozen expert systems, said Cecil O. Smith, senior vice president.

Part of what makes these systems popular is the decreasing cost of creating the software. Specialized computers have now been replaced by off-the-shelf personal computers, which can be used to develop expert systems to run on mainframes. The cost of the software to build an expert system, called a shell, has dropped to less than $1,000.

Because PCs have been substantially enhanced in the past few years, these shells have also become extremely powerful and flexible. The lower costs may also take the technology out of the hands of big banks and make it available to smaller ones. □

Expert Systems

Big banks show the strongest interest



Bases: 333 banks with at least $75 million in deposits
Percentages rounded

Source: American Banker Technology Survey 1990

Big Players Taking a Shine To Imaging Systems

By Jeanne Iida

BUT LONG LEAD TIMES FOR DOCUMENT DESIGN, TRAINING MAY PUSH BACK BANKS' PLANS

Big banks have aggressive plans to install image processing systems, but most smaller banks still find themselves precluded from experimenting with the costly new technology, the *American Banker*'s annual technology survey finds.

Twenty-seven percent of banks with more than $2 billion in deposits plan to have image systems in place by the end of next year – three times the number that say they already have such systems installed.

Indicating that image processing is, at least for now, a big-bank luxury, only two of the 240 banks in the survey with less than $750 million in deposits have installed the technology. Another 26, or 11%, said they planned to install it by the end of 1991 – well below the 27% of the biggest banks polled.

Optimistic Expectations

But even the biggest and most sophisticated banks may be overly optimistic about how quickly they can put these systems in place, knowledgeable bankers said.

"I think [those expecting to install by the end of 1991 are] very optimistic," said Gilbert Arbuckle, senior vice president in the information management and research department at Mellon Bank, Pittsburgh. Mellon is installing image processing systems in its wholesale loan and check processing areas.

"There is a long lead time to get the bank ready with document design, training, and rethinking procedures."

Mr. Arbuckle, who heads check processing at Mellon, said he expects no more than 50 banks to install high-speed image systems by the end of 1991.

Of the banks that plan to install imaging systems, 43% said they would install the more expensive, high-speed transaction processing systems, which are used for such high-volume procedures as check processing.

A smaller group – 32% – said they would install the stand-alone systems suitable for storage and retrieval of documents, often called electronic file folder systems.

Big banks were particularly likely to opt for check processing systems.

Of banks with $2 billion or more in

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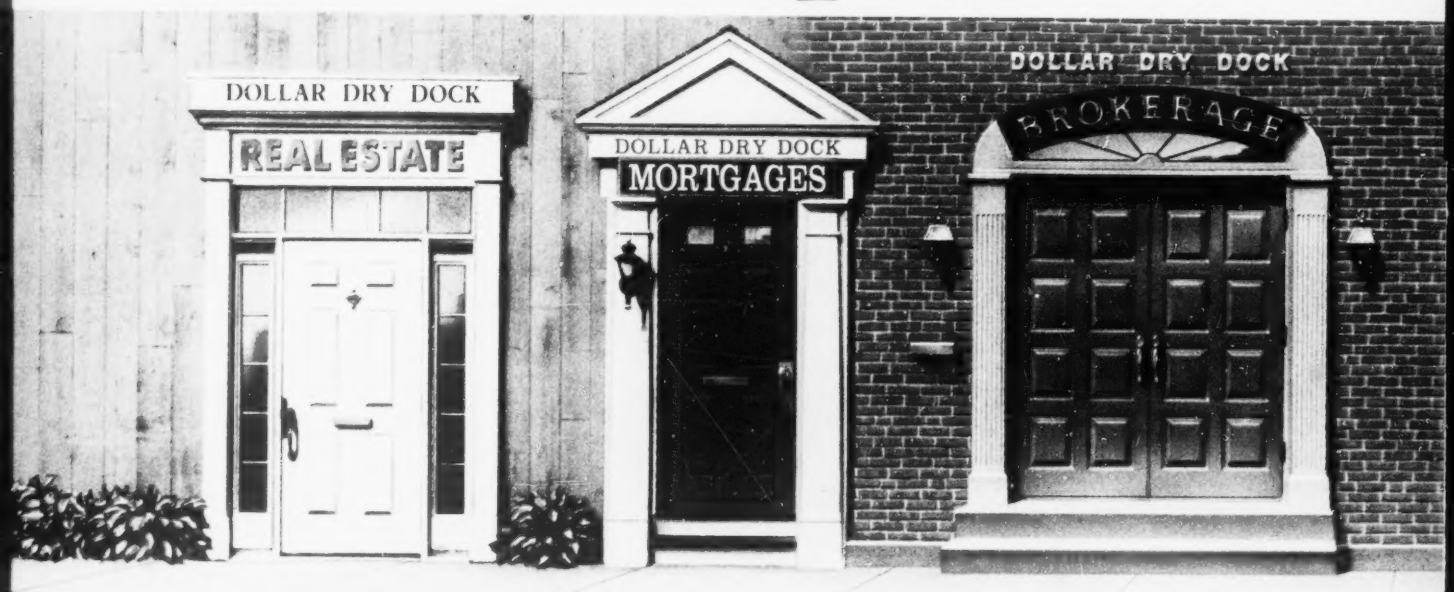

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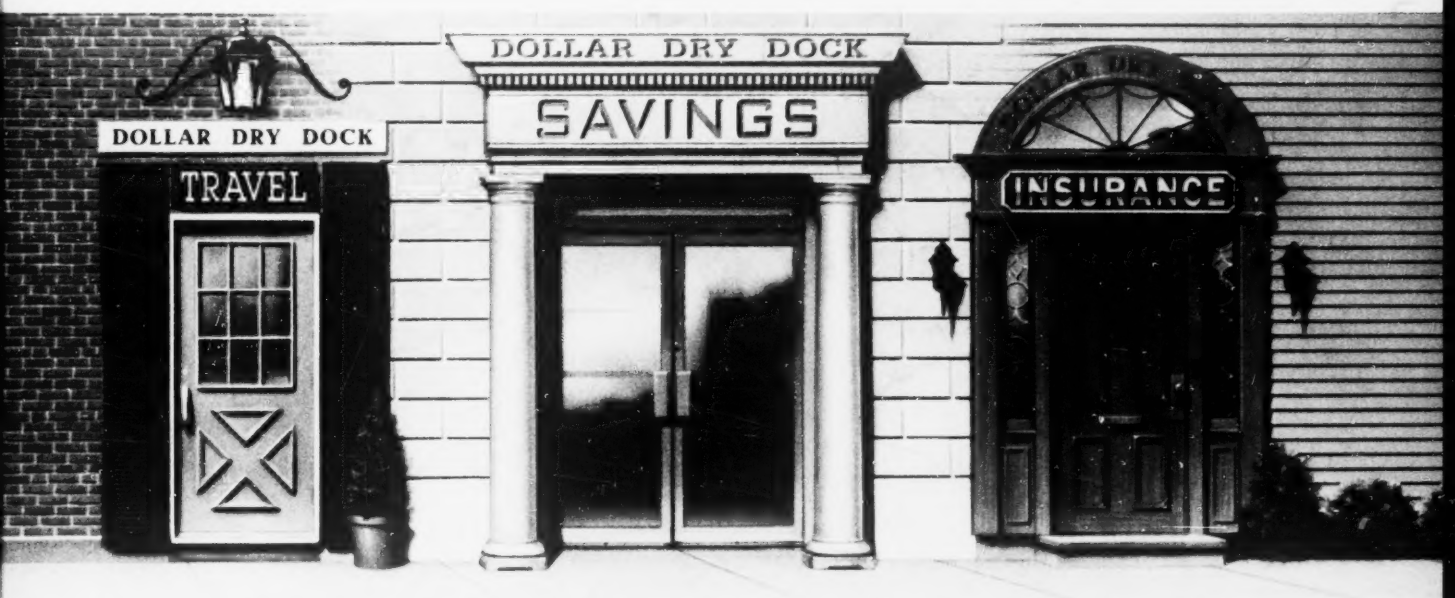
Dry Dock divide



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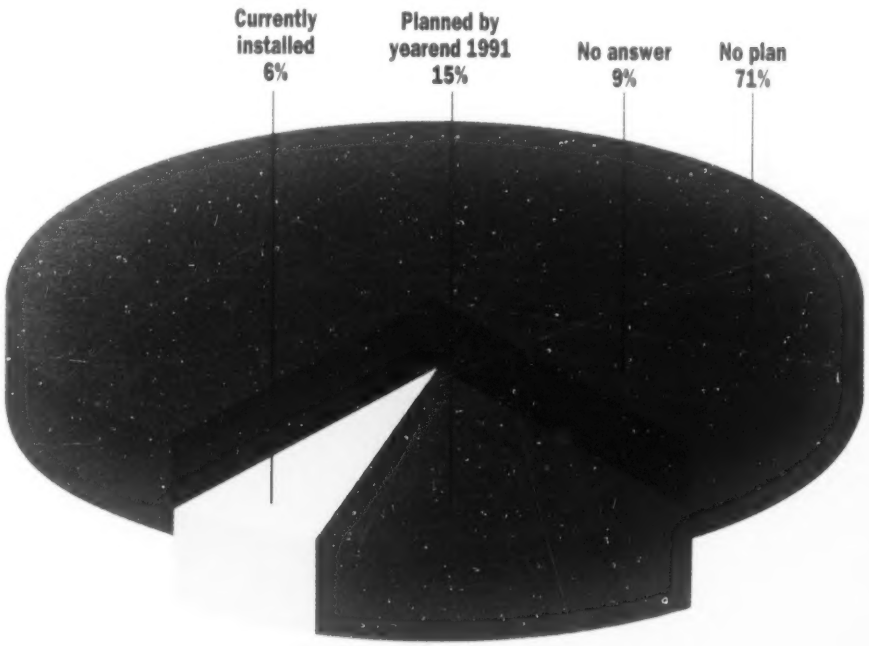
deposits that installed or plan to install imaging technology, 83% said they would use the higher-cost, high-speed transaction systems, while 42% said they would install the more limited document systems. Smaller banks were more inclined to choose inexpensive systems.

Image-Based Technology

More than a fifth of larger banks plan to use imaging by 1991



Base: 171 banks with at least $250 million in deposits
Percentages rounded

Source: American Banker Technology Survey 1990

Best Systems Cost Much

The survey results reflect the high cost and complexity of high-speed transaction processing systems, which are too pricey for the majority of banks. Check processing systems, for example, start at a couple of million dollars.

"The cost of some of these technologies is based on the volume of items or data, and smaller institutions don't have the volume to drive the profitability," said Roger Elsom, vice president and manager of operations support at Huntington Service Co., the operations subsidiary of Huntington Bancshares Inc., Columbus, Ohio. Huntington plans to have a check processing system installed by yearend that will process one million checks daily.

Eventually, larger institutions are likely to market these services to smaller ones, which will bring down the cost to the smaller banks. But right now "bigger institutions have their hands full just figuring out their own applications," Mr. Elsom said.

Treading Cautiously

The caution with which many banks approach image processing is understandable. SunTrust Service Corp., the data processing unit of SunTrust Banks, Atlanta, estimates that image processing could cost as much as 1% of assets, or about $30 million, according to Thomas G. Ash, president and chief executive of the data processing subsidiary.

It is also hard for banks to contain the effects of a high-speed transaction processing system.

No Turning Back

"Putting in an imaging system is a no-turning-back thing," said Alan Lipis, president of Global Concepts Inc., Atlanta. "There is no easy way to back off of it."

SunTrust is one of a group of 23 financial services companies and vendors that are sharing the cost of a joint study of the technical and managerial issues involved in image processing. Mr. Lipis' Global Concepts is acting as a consultant to the study group.

Other participants in the group are American Telephone and Telegraph Co., Chase Manhattan Corp., First Wachovia Corp., Huntington Bancshares Inc., MasterCard International, MCI Communications Corp., and Visa U.S.A.

"There are banks that have thrown vendors out," said Mr. Lipis. Banks ran into problems like not adequately planning how to manage the images once they were in the system and choosing vendors who were overextended, Mr. Lipis said.

"There's a more realistic approach these days, with phased implementations," he said. Both International Business Machines Corp. and Unisys Corp. have introduced their check processing systems in stages, with the first phase dealing only with check capture and not with back-office procedures. "It may take three to four years to get a fully integrated check processing system" from vendors, Mr. Lipis said. □

Using Fewer Providers is Trend In Telecommunications

By Karen Gullo

LARGER BANKS ARE MORE LIKELY TO USE MULTIPLE CARRIERS

Telecommunications is the lifeblood of a bank. So the decline in costs of telecommunications services since the breakup of the Bell system in 1984 is a real boon to financial institutions.

Increased competition and advanced technologies such as fiber optics have spurred telecommunications providers to reduce prices and offer volume discounts for voice and data communications services.

Many institutions are taking advantage of these services and relying on just one or two providers instead of several for communications, according to the *American Banker*'s 1990 technology survey. Thirty-five percent of bankers surveyed said they use a single provider; 29% use two.

Trans Data Corp., the newspaper's research affiliate in Wayne, Pa., gathered the data by questioning operations and technology executives of 333 banks with at least $75 million in deposits.

As might be expected, the larger the bank and the wider its geographical reach, the more likely it is to use multiple communications carriers.

Thirty-eight percent of those with banks with $2 billion or more in deposits report using four or more providers; only 9% of banks that size use only one company. Conversely, 37% of banks with assets of $100 million to $250 million report using a single company; 12% use four or more.

Using Single Vendor

Using a single supplier for telecommunications services has several advantages, according to bankers. It promotes consistency in telephone services across the bank and concentrates the management and servicing of a network with a single vendor.

"We want to deal with a single vendor," said Lawrence K. Dorf, executive vice president in charge of telecommunications at Security Pacific Automation Co., a subsidiary of Security Pacific Corp.

The bank is implementing a communications system that will provide high-speed links among all its branches in California and eventually among all locations around the world.

Though Security Pacific now uses leased-line service from several vendors for voice and data communica-

tions, Mr. Dorf said the plan is to use one vendor that can provide connectivity to networks in other parts of the country and the world.

Telecommunications companies are offering price incentives to consolidate their suppliers. Carriers such as American Telephone & Telegraph Co. offer volume discounts to companies that sign long-term contracts for customized data and telecommunications services. Several banks, including Chemical Bank, Citicorp, and First Chicago, are taking advantage of these offerings.

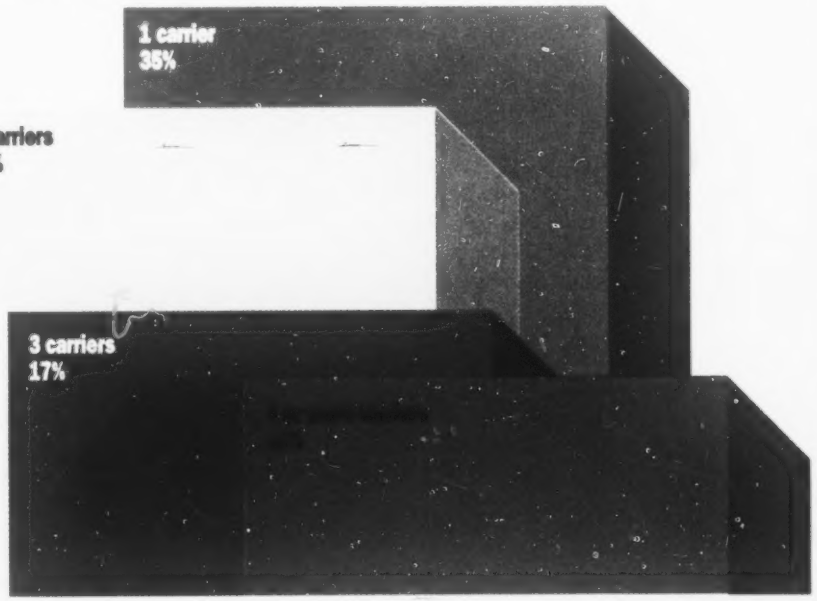
Security Pacific's new communications system will transport data from automated teller machines and branch automation systems as well as voice traffic and, eventually, images. The system will replace multiple networks that support branches' voice and data communications.

Just as banks are merging data center operations, they are shrinking the number of networks they maintain. The reason is the same: money.

A whopping 70% of banks that have merged in the past two years are merging data communications networks as well. Another 20% plan to merge networks by 1991.

Number of Communications Carriers Used

Most banks use one or two



Base: 333 banks with at least $75 million in deposits

Source: American Banker Technology Survey 1990

Communications Mergers

Half the banks in the survey that are merging operations are currently merging telephone networks; 20% say they have plans to do so next year.

Larger banks are more aggressive in merging communications networks than small banks, according to the survey. Seventy percent of the banks with assets of $2 billion or more said they are currently merging networks, while only 25 percent of banks with assets of $75 million to $100 million are doing the same.

SunTrust Banks Inc., Atlanta, a $30 billion-asset superregional, is consolidating five networks for 750 branch locations in three states. The networks support ATMs, teller automation, branch data entry, trust processing and branch operations. The bank plans to merge the five networks into one with 15 hub locations.

"We went through three big mergers and we've reduced our costs through consolidation," said Thomas Vaughn, head of telecommunications at SunTrust. "Now we're seeing ourselves stabilizing costs. That's what we think our charge should be."

SunTrust merged the voice and data communications departments of the bank a few years ago."By merging the two functions you cut some of the reporting out, and have one decision making process. It also saves money on staff," Mr. Vaughn said.

Virtual Networks

The *American Banker* survey showed that 26% of banks have consolidated voice and data communications or plan to do so. This is true of most above $750 million in deposits, but of only 17% of the smaller banks.

Many banks are switching from private networks – using telephone company lines dedicated to the bank – to virtual networks. In a virtual network, the telephone company allocates part of its public network to the bank.

The reason for the switch: With mergers and acquisitions, banks found themselves saddled with their own mini-telephone companies. Extra staff was needed to maintain and service the network. With a virtual network, system maintenance is the carrier's job, not the bank's. Huntington National Bank, Columbus, Ohio, is installing a virtual network that is expected to improve transmission quality and be easier to maintain.

The bank's old network was a patchwork of private lines, and some branches were unable to complete one out of every four call attempts.

The virtual network, from AT&T, solves that problem. New locations can be added quicker and easier because the phone company uses its existing phone lines instead of going in and installing new ones. □

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Verdict on R&D: Banks Should Do More

Banks have remained active in research and development, but hard technology still holds an edge over applied research

Peggy Turbett

Robert E. Moll

TECHNOLOGY has changed the face of banking. But the extent to which institutions are able to create new products and refine production techniques – or find innovative applications for those already in place – depends at least in part on their commitment to research and development.

While the majority of institutions polled in the American Banker technology survey report they do not have a formal research and development department in place, the situation reverses itself at larger banks. More than 40% of banks above $2 billion in deposits conduct some form of R&D.

But more and more often, bankers are leaving the classic, formalized research to system vendors, consultants, and specialized consortia sponsored by financial services companies. One such group, the Center for Financial Services Research and Development, a subsidiary of Arthur D. Little Inc., Cambridge, Mass., was launched by seven financial services companies last year.

In an attempt to gauge the current role of R&D at banks – and its prospects for the future – American Banker's Judy Ferring spoke to Robert E. Moll, a former banker and managing director of the Arthur D. Little group.

American Banker: How much of banks' R&D involves traditional pure research of untested technologies and how much is actually just development of existing technologies?

Moll: Historically and currently, the primary focus of research and development in banking is on hard technology, or information systems technology. Other opportunities – for example, the search for data sources to make judgments about the creditworthiness of customers – are not so heavily driven by technology.

Another example of more theoretical research that might be transportable into the financial-services industry is the use of some product-design techniques from other industries, particularly some engineering and quality-control techniques used in the automotive industry.

AB: Is there an ideal ratio between the technological and applied research areas of R&D?

Moll: I guess it would vary, but as a

Judy Ferring is senior editor for Branch Manager, an American Banker newsletter.

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general rule, a good balance would be about fifty-fifty.

AB: It has been said that while most banks should be able to analyze and apply another industry's production techniques – the so-called soft side of R&D – technology takes a certain amount of expertise. Do you agree?

Moll: Both take a certain amount of expertise, and banks can get involved in both – internally through their staffs or externally through outside resources.

For example, if I'm looking at how I might re-engineer a branching facility, I need engineering skills, and typically banks don't have engineers on their staffs. On the other hand, if I want to build more advanced computer systems, chances are greater that I'd have those resources on my staff. So, in some cases, applying another industry's techniques – using soft R&D – might require more expertise.

AB: Are banks concentrating too much on technology at the expense of applied technology or production techniques?

Moll: I think they aren't concentrating enough on both technology and non-technology areas. In each area they should do more, because their competition from a variety of sources – the industrial sector, foreign companies, and the like – will be stepping up their activities in a broad range of R&D areas.

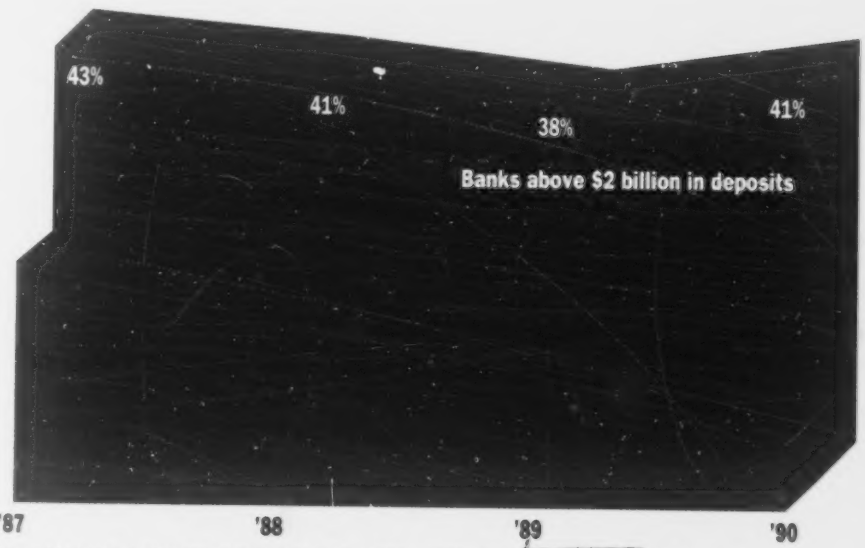
Over time, companies involved in R&D usually become stronger. We're beginning to see that in the financial community.

AB: Corrollary to that, are banks that skimp on R&D putting themselves at a competitive disadvantage?

Moll: That's a bit of a generalization, but I would say that the banks that do not take research and development seriously – and up until recent years, that's been the majority of banks – will lose ground competitively. If one loses a sufficient amount of ground, one's survival is threatened.

Research and Development

R&D thrives – relatively – at the biggest banks (percentage with formal R&D functions)



Bases: 171 banks in 1990, 213 in 1988, 204 in 1988, 181 in 1987, all with at least $250 million in deposits
Source: American Banker Technology Survey 1990

AB: Is spending a good way to measure the quality of a bank's R&D program?

Moll: No. I'm more inclined to look at whether they're spending money on applied research and development, outside of developing data processing systems.

Historically, banks equated R&D with computer systems development, and there's just not much applied research that goes into systems development. The subject is much broader than that.

AB: The center describes its mission as as analyzing the costs and benefits of emerging technology, and looking for technological developments and innovations that offer a competitive advantage. That sounds like two ways to say the same thing.

Moll: We're talking about two separate things. There are a number of growth technologies and some emerging technologies. Expert systems and image processing are growth technologies. Voice recognition systems and imaging are emerging technologies.

Image processing is well understood, but it hasn't been fully exploited, and banks are likely to spend a great deal of money and time experimenting with the technology before they get a good fix on how to exploit it.

With emerging technologies, the idea is to be aware of opportunities so that you're poised to take advantage of them. But that's a tough task. There's just too much printed material to deal with.

Some people are attempting to use technology to filter global news events and make connections between the events and their own interests. In our research program, for example, we're developing an expert system to read the news and interpret it. The system

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is experimental. But it likely will increase the demand for information, because more people will be able to understand it.

AB: Should the banking industry coordinate its research and development activities?

Moll: Yes. In 1984 Congress passed the Collaborative Research Act, recognizing that the United States was perhaps falling behind in some of its developments. The act encourages competing companies to pool their resources to conduct research and development.

Since then, 40 to 50 R&D consortiums have been established. MCC in Austin, Tex., is a classic example of how competing companies – in this case, computer companies – have banded together to do research and development. Our center, the Center for Financial Services Research and Development, is in this same mold, and there are likely to be many others.

AB: Will they all be looking at the same kinds of things?

Moll: No. What they focus on will depend on the skills they bring to the table. For instance, if you have a university that's well known for a certain field of analytics, they might focus on some issues in a different way than we do at the Center for Financial Services.

Given our technological expertise, for example, we will tend to look at the subject of branch banking or commercial lending from a technological perspective.

AB: What have you done in the area of branch banking?

Moll: On that subject, we have two angles of attack.

First, we're trying to see if we can improve the rate of return on branches. Second, we want to see if what we can do without branches: What kind of markets can we pursue, what kind of products can we offer, how can we deliver services without branches?

"The banks that do not take research and development seriously – and up until recent years, that's been the majority of banks – will lose ground competitively. If one loses a sufficient amount of ground, one's survival is threatened."

AB: Is this an either-or situation?

Moll: Perhaps. A bank might choose one of these strategies, or it might choose to pursue both concurrently: one in the physical market in which its branches exist and one in geographic markets where they don't have branching facilities.

AB: If you can go without a branch, why wouldn't you? Wouldn't it be cheaper?

Moll: Yes. But you would be limited to dealing in products that could be sold through the mail or through the mass media – less complex products than you might sell if you had a physical presence.

Complex services are often enhanced with human interaction between the customer and the person who is selling them the service.

AB: Are banks pretty cooperative about sharing what they learn through R&D?

Moll: With the exception of proprietary information, yes. Banks have always been willing to share operations information, such as how fast a checking account process works.

Banks also have been sharing data in the development of base-computer systems. But when it come to expert systems, or knowledge-based systems, they're less open.

As a rule, banks that are doing interesting things are not willing to discuss them.

AB: Then how do you know what they're doing?

Moll: You can learn about the applications they are working on. But they won't share much about how they are doing it or what the results are because, particularly with expert systems, companies are gaining a strategic advantage.

Banks are modeling systems after their own experts. If I employ an expert in factoring for the retail industry — and I'm going to computerize that knowledge – that's pretty valuable to me as a company, computerized or not.

Just as a super stockbroker doesn't go around telling people his tricks, a bank isn't going to go around telling people its tricks once they're in the computer system.

AB: What happens when this man leaves the company?

Moll: That's part of the reason that expert systems are being focused on: The point is to not only capture that knowledge, but multiply it.

AB: Has there ever been a dispute over who "owns" that knowledge, the expert, or the owner of the expert system?

Moll: We've never heard of it. What we have found is that the expert that works to develop an expert system around his own expertise actually begins to have a clearer understanding of [that area of expertise] himself. □

Vendors

A perennial favorite, IBM continues to garner praise from bank technologists. But many would like to see more software support from the major suppliers. Mainframes are still the machines of choice for handling huge transaction volumes, making the trend toward 'downward migration' doubtful. To keep pace with the competition, some banks will turn to outside firms for operational support.

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The Outsourcing Solution
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Most Banks Give Vendors Satisfactory Marks

By Teri Robinson

BUT GROUNDSWELL OF DISCONTENT IS EMERGING OVER SERVICE AND SUPPORT

As bankers intensify their search for computing power and efficiency, they are becoming increasingly critical of the service and support provided by the major computer companies, recent *American Banker* technology surveys indicate.

Asked to rate the vendors on overall satisfaction and several service categories, a majority of computer owners gave the three dominant equipment companies good or excellent grades. But bankers have become less inclined to give the highest rating than they were when polled in 1987 and 1988.

According to industry observers, the results reflect a greater sophistication among bankers and a skepticism that vendors provide efficient and reliable performance at a reasonable price.

International Business Machines Corp., the company identified as primary mainframe supplier by two-thirds of the banks with at least $250 million in deposits, is also the most praised of the big three vendors. (The others are Unisys Corp. and NCR Corp.)

The percentage of bankers who said they are very or completely satisfied with IBM totaled 78%, compared with 76% for Unisys and 68% for NCR.

Top grades for IBM have fallen from 27% in 1987 to 22% this year. For Unisys the decline was from 27% to 17%.

IBM Retains Lead

NCR's top ratings, which jumped from 13% in 1987 to 33% in 1988, dropped back to 18%. But that still leaves NCR the only vendor that looks better now than it did three years ago. With only 22 NCR users in the *American Banker* survey sample, these results have a high degree of statistical variability and are not as reliable as the IBM and Unisys data.

According to the telephone survey of 333 senior operations officers, conducted by Trans Data Corp., IBM held on to the No. 1 position that it has enjoyed since the 1950s and that

Teri Robinson is a business writer based in New York.

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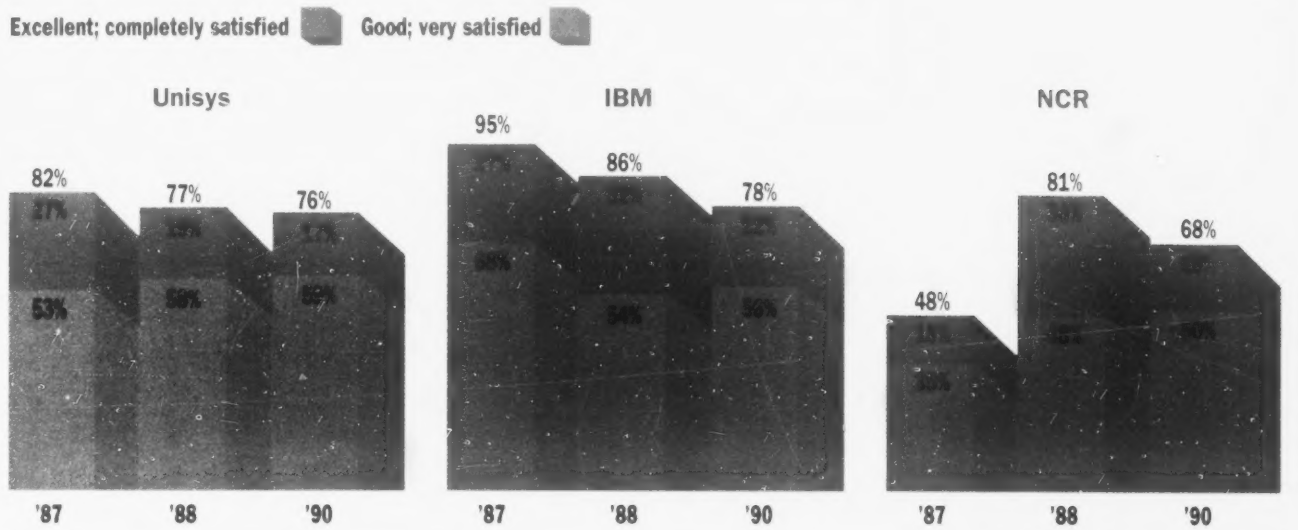
Bankers Rate Their Vendors

Overall satisfaction with three top mainframe suppliers



Bases: 239 mainframe-owning banks in 1990, 215 in 1988, 239 in 1987

Source: American Banker Technology Survey 1990

showed up in the initial *American Banker* technology surveys in 1987 and 1988. The survey sample this year included 239 banks that own mainframe computers.

IBM's market share among all the banks in the survey, with a minimum of $75 million in deposits, was 44%, followed by Unisys at 15% and NCR at 7%.

Large Banks Tell Tale

More indicative of IBM's dominance were the responses of larger banks, with at least $250 million in deposits: 67% called Big Blue their primary mainframe vendor, compared with 20% for Unisys. NCR was identified by 4%, but its strength is in the smaller-bank market; 17 of the 22 NCR customers in the survey sample have less than $250 million in deposits.

Amdahl Corp. garnered 3% of the banks with more than $250 million in deposits, and other vendors, including Digital Equipment Corp. and Hitachi Ltd., shared 7%.

Jack Steeg, assistant vice president in NCR's financial division, admitted that the company has lost ground in the group with over $250 million in deposits. "Those markets are typically markets being merged and bought up," he said. "We've definitely lost some share."

The survey showed NCR holding on to 10% of the banks with $75 million to $250 million in deposits, which Mr. Steeg said is below par for the company. "Typically, that's a very good market for us; we would expect a larger percentage than that"

Untapped Market

O.G. Greene, a Unisys official, also took issue with the market share figures. "Today, nationwide, we hold 38% of the market in thrifts alone" for host-based systems. Thrifts were not included in the group surveyed by Trans Data, a Wayne, Pa., affiliate of the *American Banker*.

"Overall, we're closer to the 20% to 30% range," he said.

The survey results also indicated that there is still a large, seemingly untapped market for vendors to exploit. It is surprising, in an industry considered to be on the leading edge of technology and with the costs of data processing are coming down, that 27% of the institutions do not have a host computer.

Among institutions with deposits of $75 million to $100 million, 42% do not have host computers. Only 15% of those bigger than $2 billion in deposits lack a mainframe, and many of those are presumably part of larger holding companies that supply data processing from a central site.

The figure may indicate that a number of banks are using increasingly powerful minicomputers and personal computers where mainframes once were required, but Mr. Steeg of NCR has a different theory: The institutions

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are relying more and more on independent service bureaus.

"NCR has a real good market in that," Mr. Steeg said, claiming that of the 12,000 or so banks with annual deposits up to $750 million, about a third have data centers.

Mark Mauriello, manager of financial services industry operations for IBM, agreed that a large number of the financial institutions that do not have host systems are heavily serviced.

Servicing Advantages

While he sees many banks bringing their computer services in-house, Mr. Greene of Unisys said many still see advantages to being serviced by another bank or service bureau.

"They don't have to deal with staffs; they don't have the capital investment,'" he said, noting that the tradeoffs are flexibility and control. Mr. Greene sees cost saving as the prime reason for financial institutions to turn to off-site servicing.

But Mr. Steeg of NCR believes the choice boils down to a difference in philosophy among banks. "You have to give up some control. In the past, there has been a slight variance in cost," but that is not generally the guiding factor in deciding whether to keep information systems in-house or to opt for a data center solution.

"NCR is probably one of the leading data services providers – one of the top three in country," he claimed.

In the satisfaction ratings, users seemed to be content with the hardware maintenance provided by the top three vendors.

Executives from 37% of the institutions surveyed said the level of hardware maintenance provided by their primary vendor was excellent. Another 44% rated hardware maintenance very good, and 12% said they were neither satisfied nor dissatisfied.

The vendors did not fare as well when it came to software support. Observers have pointed out that computer users are becoming more concerned with finding software solutions and applications that enable them to operate more efficiently. Consequently, their demands are changing and they wield greater clout. Vendors are scrambling to adjust their own strategies to heed these demands.

Of the senior operations officers surveyed, only 17% rated their primary vendor excellent in software support, with another 33% saying they were very satisfied. But 25% were neither satisfied nor dissatisfied, and 14% were displeased.

Peter Crowell, president of Chase Access, a computer services unit of Chase Manhattan Bank in New York City, explained that dealing with software is new ball game for the top three hardware vendors.

"Those vendors, by their own admission, do not classify themselves as software providers," he said. "They are trying to get into the software business more than they are in it, but they are not dominant."

Mr. Crowell pointed out that as hardware reliability has increased, both users and vendors have turned their attention to software. "Hardware price/performance keeps getting better and customers therefore get a better deal, but how do vendors make money? They focus on software."

Mr. Mauriello of IBM agreed that the software market is more immature and more dynamic than the hardware arena. Although software quality is improving, the sphere is much more complex than basic hardware, he added.

Mr. Greene said much of existing software in banks is old and has been installed for a long period of time, making it too inflexible for the adjustments and changes that banking customers demand. "It takes a longer period of time to solve problems," he said. "You have a lot of rewriting, which is time-consuming and expensive." □

Mainframes Are Still Mainstays

Not all banks keen to adopt mini networks

Although much has been said about "downward migration" – the switch from large mainframe computing to networks dominated by minicomputers – not all bank operations experts are eager to make the move.

According to the 1990 *American Banker* technology survey, 89% of senior operations officers said their institutions are not moving any of their current mainframe applications to a smaller system.

Only 7% have plans to move systems to PCs or minicomputers by the end of 1991.

A greater percentage of large banks, with deposits of more than $2 billion, are planning such switches. Seventeen percent of that group said they would move some applications from a mainframe to a smaller system by the end of next year.

For those with downsizing plans, the personal computer seems to be the favored alternative, slightly edging out the minicomputer. Of the respondents who are either planning to shift computing strategies or are currently making the move away from a mainframe, 52% said they would take oper-

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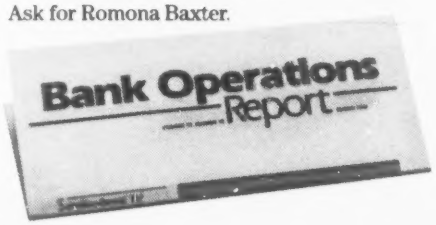

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ations down to the PC level and 48% have chosen a minicomputer.

Meanwhile, one banker in four is taking the opposite tack and migrating from small computers to a more powerful mainframe.

The results do not reflect what is widely considered a trend among computer users. The downward shift from mainframes to small systems – and from centralized to distributed computing – is believed to be somewhat cyclical, and computer vendors and users alike are currently contending with it.

At one consulting firm in Boston more than 70% of clients were recently trying to downsize to local area networks – which connect personal computers – in certain business units. The results of a Sierra Group study showed LAN servers to be the fastest-growing segment of the computer industry. The group predicts that the number of those servers will increase 147% in 1990.

Jack Steeg, assistant vice president in NCR's financial services division, said, "You see some of the biggest banks attempting to distribute power using 486 technology – high-MIP technology." He was referring to the more powerful 486 semiconductor chip and the rapid processing rates measured in millions of instructions per second, or MIPS.

Volume Is Big Factor

By their very nature, financial institutions are required on a daily basis to process a tremendous amount of data quickly and accurately. With such huge transaction volumes, it is difficult to abandon host computers for the more trendy PC or minicomputer alternatives.

The *American Banker* survey bears this out.

Peter Crowell, president of Chase Manhattan Corp.'s Access Services unit, expects more users to switch from host-based systems. He calls the concept a good one but warns that the idea breaks down as size increases.

Because banking is so transaction intensive, Mr. Crowell suggests that financial institutions study their processing needs carefully and refrain from switching to a popular strategy that could eventually be overrun by added processing demands.

Reports of the death of the mainframe have turned out to be premature, with the machines assuming a new role in large networks. As the amount of data stored increases and the number of transactions or applications grows, the mainframe is likely to be used either to store data or to run applications that require substantial computing power.

"There is no question that personal systems are growing in importance, but we don't see that as a detriment to the mainframe. It's a new marketplace," said Mark Mauriello, manager of financial services industry operations at IBM Corp.

"Look at the trend in banking applications," he said. "It's clearly driving for increased levels of integration," or interconnection between various systems and service categories. "That is going to be available because we have much better data management techniques. That to me implies large, centralized data bases, which are more functional. The mainframe continues to be the primary repository."

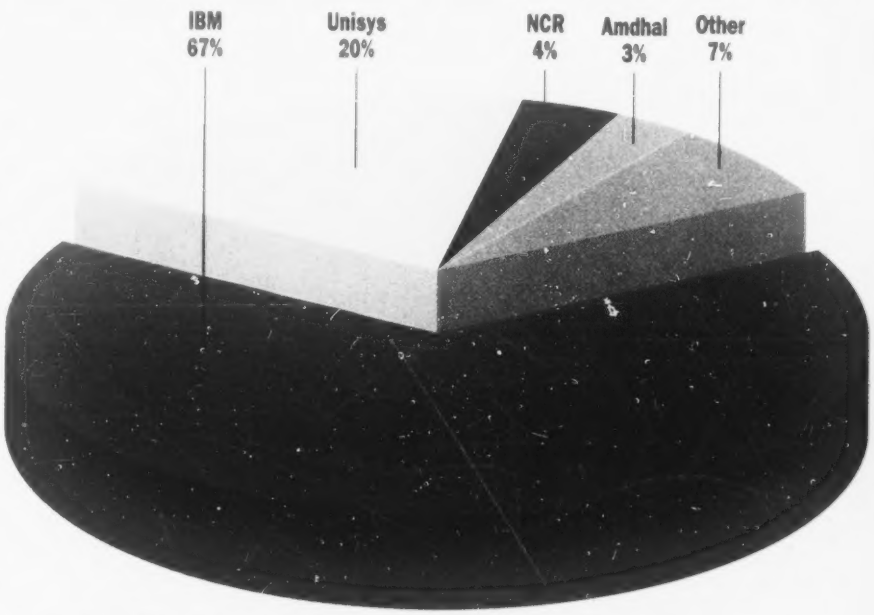
Mr. Mauriello foresees personal systems working in concert with mainframe technology. Users will download information from the mainframe to personal workstations capable of running a slew of applications not easily accessible before.

With the mainframe's future apparently secure, complementing the proliferation of PCs, it may be the medium-size minicomputer that is on the road to extinction. □

– *Teri Robinson*

Mainframes by Vendor

Two-thirds of larger banks with host computers call IBM their primary company



Base: 137 banks with at least $250 million in deposits.
Not shown: banks with no mainframe (20% of sample).
Percentages rounded

Source: American Banker Technology Survey 1990

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Outsourcing Set to Boom in 90s

Third-Party Experts Seen Helping to Cut Costs

AMID the spiraling sophistication of technology, some banks are coming to the conclusion that certain operations are unprofitable, too time consuming, or simply not a part of their strategic plans. Thus, an increasing number are enlisting specialists called outsourcers to handle all or part of their technology requirements. In the following piece, Stephen G. Racioppo of outsourcers Anderson Consultants, charts some trends that are expected to contribute to outsourcing's growth.

Competitive banks need strong information processing systems. But new technology is often difficult to understand and even more difficult to implement.

As a result, an increasing number of banks are turning to outsourcing – or the use of third-party providers – to help satisfy their technological needs. Outsourcers can often provide more sophisticated software that can improve productivity in back-office operations.

According to recent projections, the value of information distributed through outsourcing contracts could total more than $100 billion by 1995. Demand from information-intensive industries, including banking, is expected to fuel the boom in outsourcing.

Outsourcers can be expected to help banks consolidate redundant systems during mergers and acquisitions, free them to develop new products, and improve customer service by providing timely access to vital information. The growth of outsourcing will be spurred by the need to control costs and to create new products.

Through outsourcing, banks can contain operating expenditures for a product because the cost of support systems can be made to vary with the volume needed at any given time. This allows technology capabilities to be flexible when markets are volatile.

In hiring an outside vendor, banks are also more likely to pay only for the technology they need. In an effort to service all potential clients, banks often invest in more technology than they use, thus eroding profitability.

Faster Time to Market

By sharing the workload, banks can cut months off the time needed to bring a product to market. In a cost-conscious environment where time means money, a few months can mean the difference between success and failure for new financial products.

In banking and elsewhere, information technology systems tend to evolve in an ad hoc fashion, often growing more fragmented and less efficient. Outsourcing lets companies get off the "technology treadmill," a situation in which an operations unit is unable to create a better system because it is frantically trying to hold an old, inadequate system together.

Under an outsourcing agreement, an outside vendor could maintain an old system, develop a new one, or both. By using a third party, companies can upgrade systems without losing the use of their information technology support and adding staff they may not need long term.

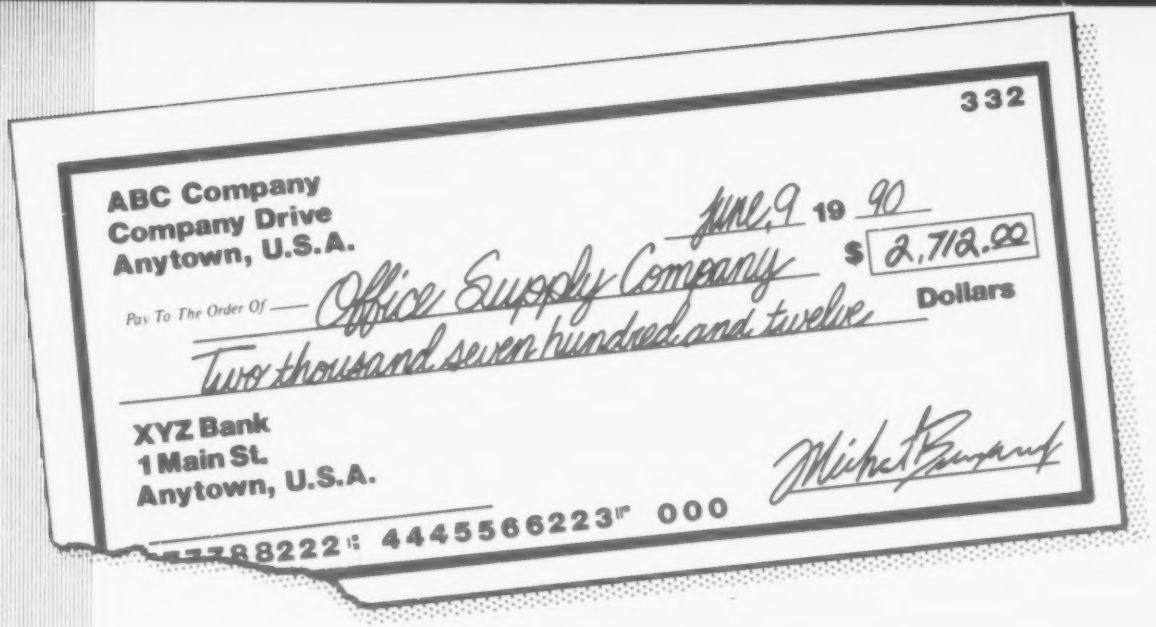
In the near term, industry watchers expect the demand for technology experts to exceed supply. As a result of this crunch, some experts predict, the strongest staffers may go to work for technology companies that offer outsourcing, many of which will provide fresh challenges and growth opportunities.

Vertical-Industry Skills

Under that scenario, banks with outsourcing contracts would have access to top-notch personnel without having to keep them on the payroll full time.

Down the road, a new breed of outsourcers are expected to service the banking market. These companies should add value to traditional banking services and product lines, provide timely solutions to systems problems, and have important vertical-industry skills. They will use their acumen to deliver information technology services in a timely manner.

In many cases outsourcing provides banks with a way to redeploy resources and maximize potential. By eliminating the time spent fretting over inefficient products and systems, a bank can turn to the more important task of creating a market-driven institution that is responsive to the needs of customers. □



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Dear Reader, How Are We Doing?

The *American Banker* hopes you find value in our technology survey and that the information will be useful in your work. To help us prepare future surveys, would you please offer us some feedback on this one? Please return this questionnaire to Fred R. Bleakley, Editor, *American Banker*, One State Street Plaza, New York, NY 10004. Many thanks.

1. Overall, how informative is the 1990 technology survey?

☐ Very informative ☐ Not very informative
☐ Somewhat informative ☐ Not at all informative

2. How useful is this survey to you?

☐ Very useful ☐ Not very useful
☐ Somewhat useful ☐ Not at all useful

3. How will you use the information from this survey at work?

_____

_____

_____

_____

4. What do you LIKE MOST about this survey?

_____

_____

_____

_____

5. What do you LIKE LEAST about this survey?

_____

_____

_____

_____

6. To help us decide which areas to study in future surveys, please rank your interest in each of the categories as follows: 3 = Extremely important, 2 = Fairly important, 1 = Not important.

___ What banks spend on technology
___ Effects of consolidation
___ Salary data
___ Personnel issues
___ Investment priorities
___ Technological advancements
___ Vendor ratings
___ Listing of hardware and software suppliers
___
___
___

7. What subjects or issues that are not in the 1990 technology survey would you like covered in a future survey? What other changes would make the survey more useful?

_____

_____

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To help us to better understand responses, please fill in the following information:

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P.S. Thanks again very much for your help. If you would be willing to discuss your views about the survey with us, would you list your telephone number so that we might contact you?

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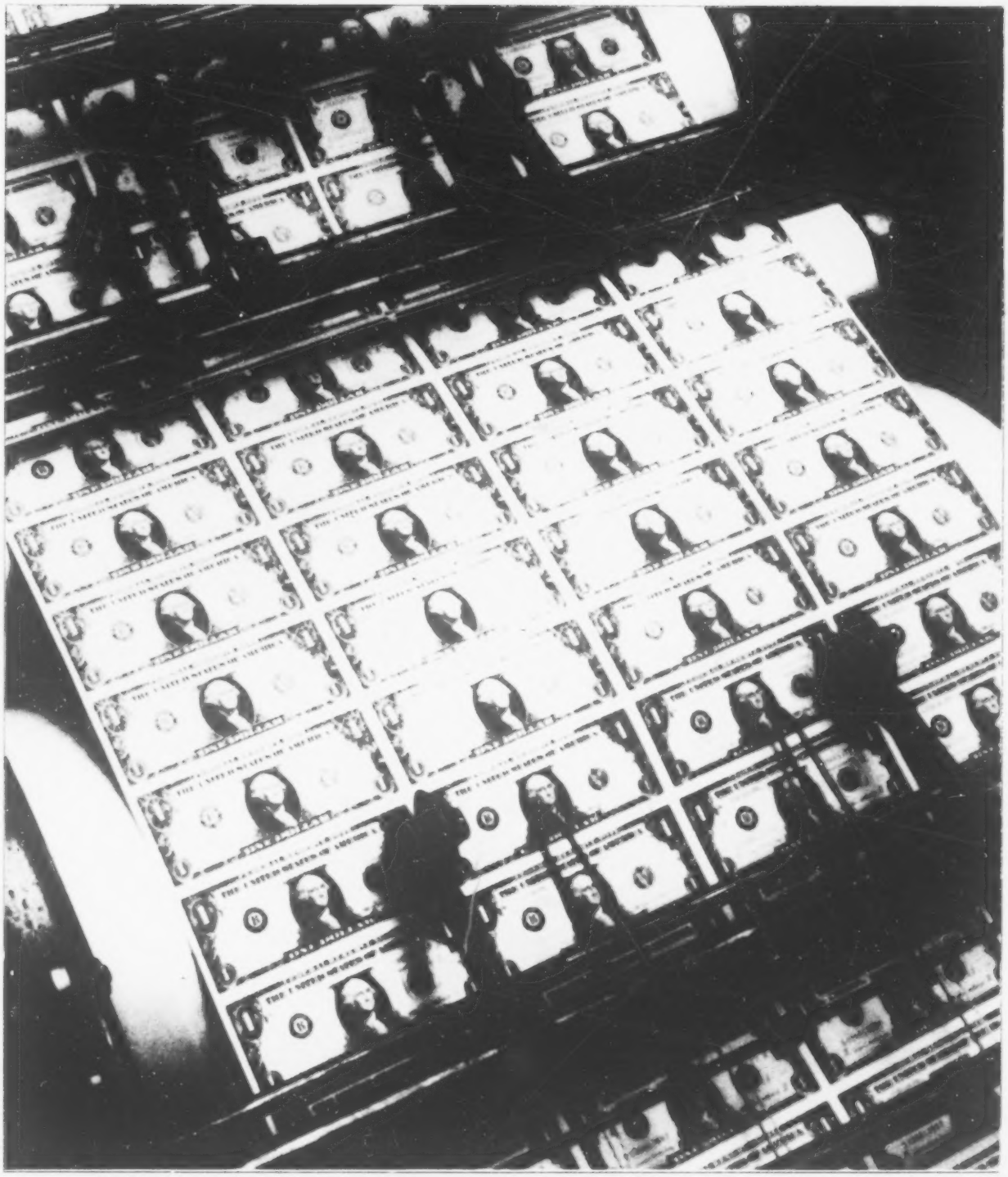

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H02M

American Banker's Technology Survey: The Questionnaire

Following are the questions that were posed to senior executives responsible for operations and/or technology at 333 commercial banks.

The interviews were conducted by telephone during March and April 1990.

The questionnaire – covering management and organizational issues, post-merger strategies, budget priorities, future technologies, and other topics – typically required 20 to 30 minutes to complete.

Management

1. What is the title of the most senior officer directly responsible for the overall management of operations within your institution? (The individual responsible for operations such as check or data processing, electronic funds transfer, management information systems, and/or other branch operations.)

A. To whom does that person report?

--Chief executive officer.

--Senior vice president.

--Other.

B. On a scale from 1 to 5, with 1 meaning no support, and 5 being extremely supportive, what is the overall level of support that the technology area receives from your CEO?

C. Your CEO's strategy with regard to technology is best described as:

1. Cost cutting is priority, regardless of technology;

2. Cost cutting is necessary, minimal investment in technology;

3. Costs are monitored, investment opportunity exists with major return on investment;

4. Investment dollars exist, modest ROI;

5. Spending on technology is priority, regardless of expenditures

D. On a scale from 1 to 5, with 1 being extremely unlikely, and 5 meaning extremely likely, what is the potential for a person with an operations background to become president or CEO of your institution?

Operations Department Architecture

2. Do you belong to a holding company?

A. Using a scale from 1 to 5, with 1 being no control and 5 being total control, please rate the extent to which operating and spending decisions are controlled by the holding company.

B. Does this influence extend to:

--Setting technical standards for operating systems?

--Having a list of approved vendors?

--Reviewing and approving holding

company recommendations?

--Joint development and evaluation?

--Combined purchasing?

--Other areas?

Mergers and Acquisitions

3. Has your institution been involved in a merger or acquisition over the past two years?

A. Have any of the operations of the involved institutions been merged, or do you plan to merge any operations during the next year?

B. Which of the following operations have been merged, and which do you plan to merge by the end of 1991?

--Data processing and host computers.

--Office automation such as word processors.

--Programming and systems development.

--Voice or telephone communications.

--Data communications.

--Corporate cash-management services.

--Branch automation.

--Automatic-teller machines and self-service terminals.

--Other retail EFT services, such as telephone bill payment, point-of-sale, or home banking.

--Mortgage processing.

--Commercial-loan processing.

--Consumer-loan processing.

--Check or item processing.

--Credit-card processing.

--Trust operations.

--Accounting and bookkeeping.

C. How much would you estimate that your institution has saved by merging these operations, as a percentage of the total combined operating budgets?

D. Is the percentage above higher than expected, about the same as expected, or lower than expected?

E. Have the institutions involved in the merger/acquisition unified the companies' names?

F. What were the names of the institutions involved in the merger?

Personnel

4. Approximately how many employees – in full-time equivalents – does your bank employ?

A. Excluding clerical staff and proof operators, approximately how many career professionals work in your operations division?

B. What is the current annual turnover rate as a percentage among career professionals in the operations and technology areas of your institution?

C. Excluding the employees in 4A (above), how many support workers (clerks, proof operators, runners, secretaries, phone operators, etc...) are employed in your operations department?

D. What is the current annual turnover rate as a percentage among non-career professionals in the operations and technology areas of your institution?

Financial Structure and Spending

5. What is your annual budget for operations, data processing and information systems, including any functions performed by an outside party?

A. Approximately what percentage is spent in the following areas?

--Personnel.

--Salaries, benefits.

--Facilities, supplies, buildings.

--Equipment or software maintenance, updating software.

--Operational or data-processing functions performed by an external agent.

B. Are the operations areas of your institution structured as profit centers or cost centers?

C. Has your institution profitably sold any technology/processing services to other financial institutions?

7. In which of the following areas do you believe you will concentrate your investments over the next five years?

--Hardware: mainframe hardware, minicomputers, department computers.

--PCs.

--Applications: data communications, data networks.

--Voice communication services, including voice response, private-branch exchange.

--Applications software.

--Personnel/training.

--Other areas (item processing equipment, ATMs/self-service terminals, EFT technology.

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Departmental Computing

8. Who is the primary vendor of the mainframe computer currently installed in your institution?

A. Please rate your vendor on the following criteria:

--Overall satisfaction.

--Hardware maintenance.

--Software support.

B. Is your institution currently moving any of its computer-based operations from a mainframe computer to some other type of computer?

B1. Is your institution planning, by the end of 1991, to move any of its computer-based operations from a mainframe computer?

C. What type of computer-based system is your institution converting to?

D. Is your institution upgrading to a mainframe any minicomputer or microcomputer applications?

9. Does your institution currently use or plan to use expert systems (rule-based decision making) software by the end of 1991?

A. Is this a pilot system or is this system used for production?

B. What applications is/will this system be used for?

--Loan approval, credit scoring.

--Fraud detection.

--Securities transactions.

--Other?

Image-based Technology

10. Does your institution currently have or plan to install by the end of 1991 image-based technology?

A. Are these or will these be stand-alone file-folder systems, or transaction processing systems?

B. Will this image-based system replace traditional data-processing functions?

Telecommunications

11. How many carriers are currently providing some type of communications service for your institution?

A. Do you have or currently plan to install by the end of 1991 integrated networks to consolidate voice and data communications?

B. Which of the following communications technologies are in use in your institution?

--Integrated services digital network.

--Software defined network.

--Satellite communications.

--Radio communications.

--Video conferencing.

--None of the above.

C. Would your institution consider using a third party for communications network management?

Research and Development

12. Do you have a research and development function or applied technology research function in your institution?

A. Is this a line item in your operations budget?

B. What is the approximate total budget for R&D in your institution?

B1. In terms of the overall technology budget, what percent does this figure represent?

C. How many employees are dedicated to R&D?

Disaster Recovery

13. In the event of a natural or other disaster, does your institution have a backup plan for your computer facilities?

A. On which of the following methods is your disaster recovery plan based?

--Hot-site back-up with bank.

--Hot-site back-up with outside agent.

--Shell building with vendor agreement for "instant" hardware.

--Other.

B. Which of the following types of testing have you done?

--Document review: walk through.

--Simulation: mock.

--Operational: full test.

--Have not tested at all.

C. Does your disaster-recovery plan provide provisions for recovery from computer virus contamination?

D. Does your disaster-recovery plan provide for recovery from unauthorized access?

E. Has your plan thus far been activated by a disaster (computer virus, unauthorized access, natural disaster)? □

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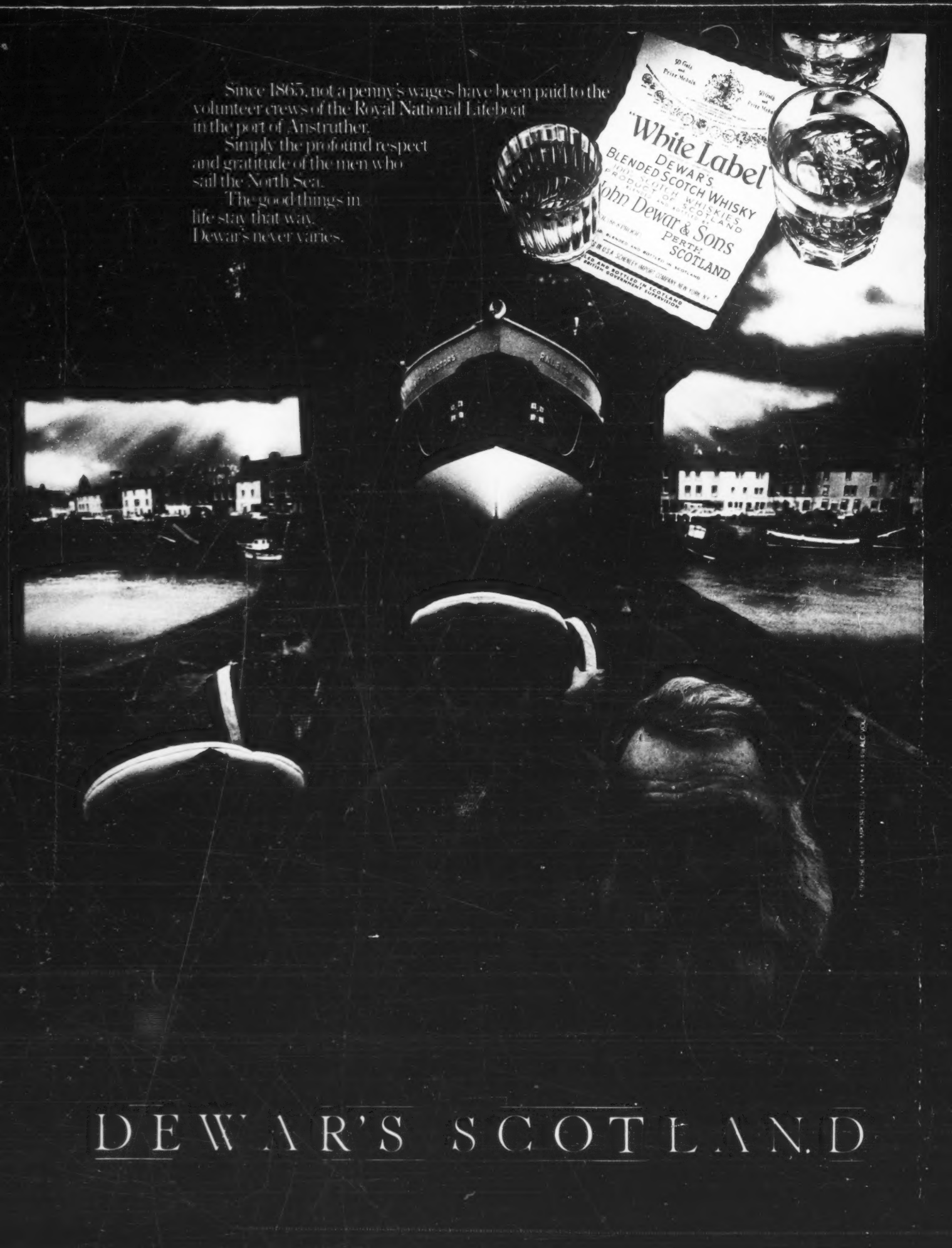
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